Defense Standardization Program

Journal

April/June 2011

Standardization Stars

Consolidated Procurement of Industry Specifications

Test Standard for Cutting Rotor Blade Erosion

Standard Containers for Moving Supplies

JCREW for Defeating Radio-Controlled IEDs

Common Code and Aircraft Avionics

Weapons Systems Data and Part Standardization

Standardized Catalog for Food Management

Defense Standardization Program
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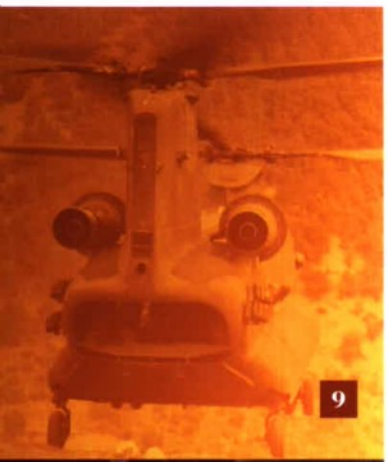

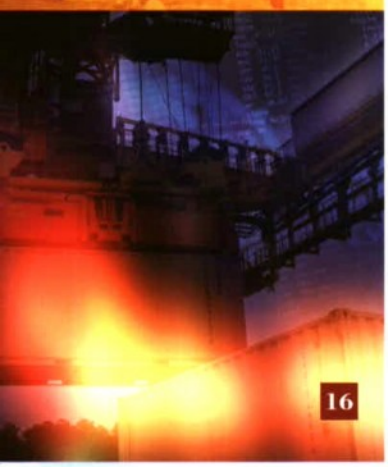

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Director's Forum

Each year, we recognize individuals and teams who, through their standardization efforts, have significantly improved technical performance, increased operational readiness, enhanced safety, or reduced costs.

Individuals and teams are nominated for standardization awards, and we identified seven as being particularly deserving of recognition. Through their efforts, sometimes taking several years, the seven winners have played an integral part in keeping our men and women in uniform safe and in providing them the tools they need to get the job done.

Standards and standardization link common solutions to common problems across all services and frequently across nations. This issue of the *DSP Journal* showcases the accomplishments of the FY10 award winners.

Congratulations to all of our award winners. I know that DoD leadership appreciates your work. These awards help call attention to the significant contributions that standards and standardization make to supporting our men and women in uniform, helping to multiply capability through interoperability, and saving money for the taxpayer. I hope that reading about their accomplishments will pique your interest and might even inspire you to submit an award nomination on the good work you are doing in standardization.

Gregory E. Saunders
Director
Defense Standardization Program Office

DPMP Defense Parts Management Portal

Defense Parts Management Portal–DPMP

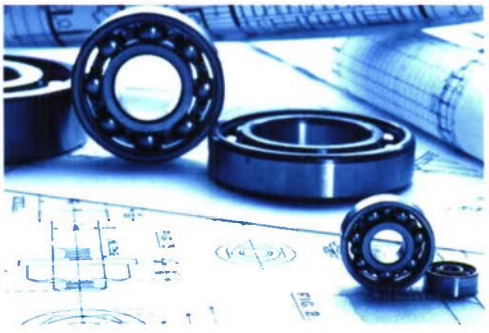
The DPMP is a new public website brought to you by the Parts Standardization and Management Committee (PSMC) to serve the defense parts management community.

The DPMP is a new resource, a new marketplace, and a "one-stop shop" for parts management resources. It is a navigation tool, a communication and collaboration resource, and an information exchange. It gives you quick and easy access to the resources you need, saves you time and money, connects you to new customers or suppliers, and assists you with finding the answers you need.

This dynamic website will grow and be shaped by its member organizations. A new and innovative feature of the DPMP is its use of "bridge pages." Organizations with interests in parts and components are invited to become DPMP members by taking control of a bridge page. Chances are good that your organization is already listed in the DPMP.

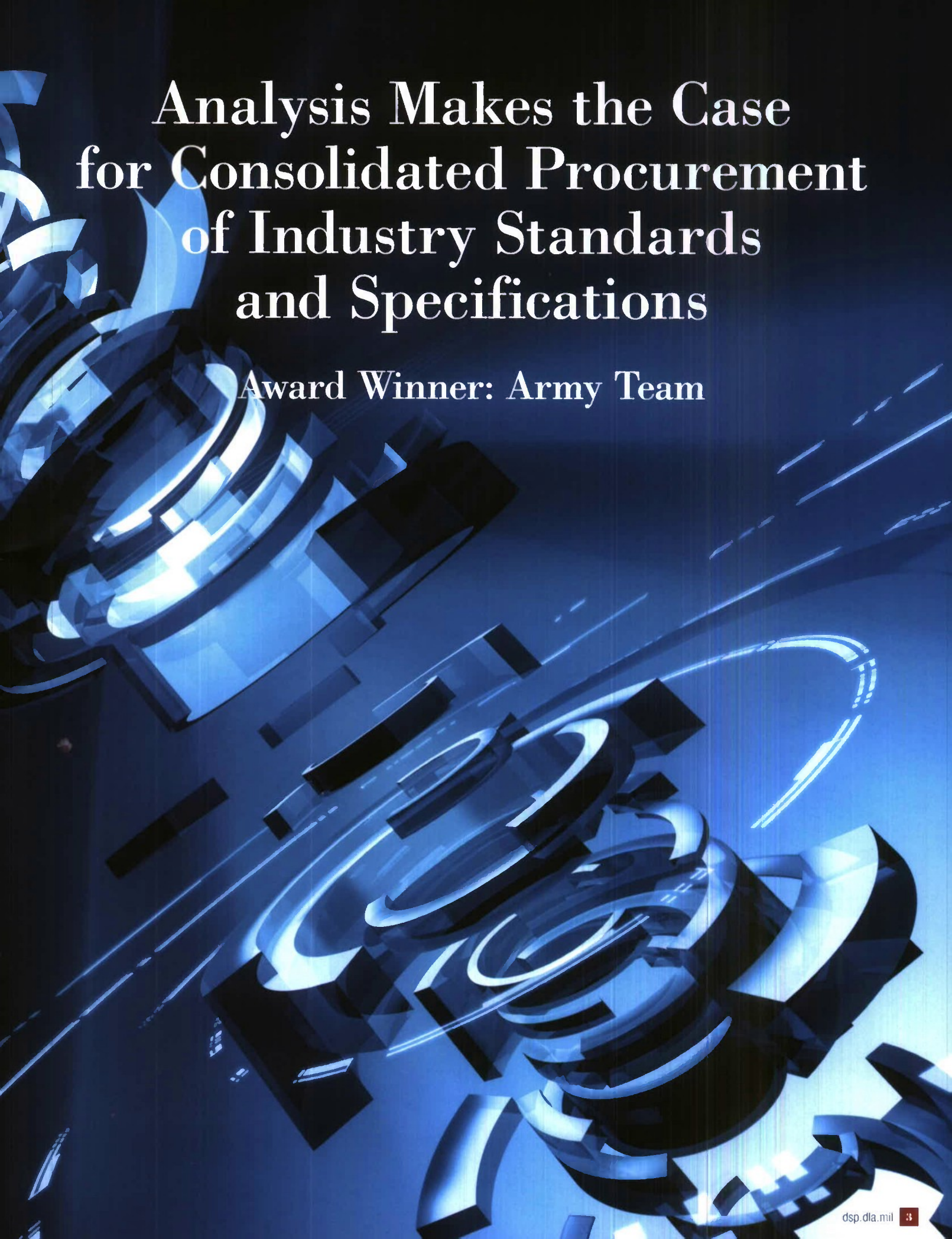
There is no cost.

Explore the DPMP at https://dpmp.lmi.org. For more information, look at the documents under "Learn more about the DPMP." Click "Contact Us" to send us your questions or comments.



Analysis Makes the Case for Consolidated Procurement of Industry Standards and Specifications

Award Winner: Army Team



A team from the Army Materiel Command (AMC) successfully crafted a business case for implementing a single contract—rather than 35 separate contracts—for the procurement of industry standards and specifications. In addition to a detailed cost-benefit analysis (CBA), the team advanced a command policy prohibiting the purchase of military standards and specifications from a commercial vendor if they are available through ASSIST. The team also managed the contract competition. By establishing a single contract, AMC eliminated stove-piped contracts and the financial drain of paying twice for U.S. intellectual property. More important, it cut the cost of doing business and provided true enterprise access to industry standards and specifications required by AMC production and life-cycle management missions. By providing enterprise access to industry standards and specifications, AMC realized a cost savings/cost avoidance of $3 million per year. AMC's model paves the way for extended cost savings across DoD through the standardization of the procurement of industry standards and specifications.

Background

As the supplier of food, clothing, transportation, communications, and weapons for the U.S. Army and of munitions for DoD, AMC requires ready access to standards and specifications that cover these items. AMC uses industry standards whenever possible. (U.S. military standards and specifications are indispensible, but do not cover the full range of items required.) Because AMC lacked a consolidated contract for procuring industry standards and specifications, AMC units were on their own to procure the information they needed to produce and maintain materiel readiness. This often led to a "hat-in-hand" approach to procuring the standards and specifications that are a necessity for research, development, and life-cycle management of soldier, weapons, and munitions systems.

Problem/Opportunity

Access to and procurement of industry standards and specifications were not standardized across AMC, resulting in redundant contracts (35 in 2007, mostly with the same vendor) and increased processing time due to uncertainty over the correct standard or specification. Also, lack of standardized data or equal access to required information content (standards and specifications) created a disparity of knowledge among geographically dispersed personnel performing concurrent tasks (e.g., flight system refit) and resulted in increased processing time and reduced support to the soldier.

Cost was another problem. AMC was paying twice for its own intellectual property, once to support ASSIST ($500,000 in 2007), and a second time to pay a com-

mercial vendor for access to U.S. military standards and specifications (as part of the individual contracts to access industry standards and specifications).

Stove-piped information due to restrictive site licenses meant that a large portion of AMC could not access industry standards and specifications. For example, a soldier in Iraq was referred to the AMC Command Librarian because he could not access an industry specification required for his job, and restrictive site licenses prevented fulfillment of his requirements. This situation was deemed intolerable by the AMC Command Librarian and the AMC chain of command.

The AMC Command Librarian recognized that addressing these problems by establishing a single contract would benefit AMC in several ways:

- AMC would be able to negotiate with commercial vendors as a single voice, which would result in lower costs due to competition.
- AMC personnel would have round-the-clock access to required information, regardless of geographic location.
- AMC would be able to leverage its librarians' expertise in information content management and the economics of information content. Comparatively speaking, AMC libraries pay very little for standards and specifications overall because librarians know how to use free services such as ASSIST and how to negotiate lower costs to procure commercially available information content.

Approach

The team researched 5 years' of procurement actions to determine the true cost of procuring industry standards and specifications. It prepared a spreadsheet listing each contract action along with details such as the funding category and the subordinate commands responsible for each contract.

The Command Librarian wrote a command policy, signed by the AMC Deputy Commanding General. The policy placed a moratorium on the purchase of military standards and specifications from a commercial vendor.

The team completed a CBA report that included narrative and economic analysis comparing the status quo to a number of alternatives. The CBA fleshed out such items as net present value, net benefits of each alternative, benefit-to-investment ratios, and savings-to-investment ratios. For the analysis, the team defined "investment" as the funds used in the field for industry standards and specifications. The cost-to-benefit ratio was sufficient for the CBA to become an item on the AMC G8 Budget Summit in July 2009, where it was agreed that funds previously ex-

pended in multiple contracts would be withdrawn to Headquarters AMC for use in establishing a consolidated contract for the AMC enterprise. Further, a command policy was written mandating that no new contracts for the procurement of industry standards and specifications be let for FY09, aside from the single consolidated contract.

Next, the team developed the statement of work (SOW) and initiated a competitive contract action. Simultaneously, the librarians on the team developed a support system to ensure that requirements for industry standards and specifications would be met as individual contracts expired at the subordinate command levels.

The Command Librarian converted a vacant personnel slot to a GS 12/13 program manager position, which was approved by the AMC chain of command, to manage the AMC Standards and Specifications Procurement Program. This position was filled in September 2009.

From October 2009 through August 2010, AMC scientists and engineers viewed 132,000 industry standards and specifications through the AMC Standards and Specifications Procurement Program at a cost savings/cost avoidance of $3 million.

The contract was awarded on September 28, 2009, and implemented on September 29, 2009. At the same time, an Army Knowledge Management (AKM) site was established to provide a single point of access to industry standards and specifications. The contractor, Information Handling Systems, Inc. (IHS), developed a custom interface for AMC access. The program manager and IHS account representative teamed up to provide web, teleconference, and on-site training. Again, no new funds were necessary for marketing or training on the consolidated access system.

Outcome

From October 2009 through August 2010, AMC scientists and engineers viewed 132,000 industry standards and specifications through the AMC Standards and Specifications Procurement Program at a cost savings/cost avoidance of $3 million. The contract for FY11 is $2.4 million; assuming the same cost savings as occurred in FY10, the cost savings over the 5-year contract will total $15 million.

Usage statistics for October 2009 through August 2010 are 120 percent higher than the highest usage in the previous 5 years covered by the CBA. This is due to the expanded scope of the contract to include all of AMC and to the ease of access to industry standards and specifications by AMC users who previously did not have such access.

AKM Goal 1 waivers—waivers to use Management Decision Package (MDEP) funds to procure standards and specifications, which are classified as non-MDEP requirements—were eliminated.

Finally, establishment of a single contract, rather than 35 contracts, resulted in a cost avoidance of approximately $2 million in labor-hours (1,200 labor-hours to produce and manage each contract times $50 per labor-hour times 35 contract actions).

Current Status

Feedback from the field rates the AMC Standards and Specifications Procurement Program as excellent. Customer usage is 120 percent higher than anticipated, which points to effective access, training, and marketing strategies.

Challenges

A consolidated contract for the procurement of industry standards and specifications was thought to be impossible to develop due to diverse funding lines and funding categories, or appropriations, such as procurement, operations and maintenance, and military construction. Building a consensus among the user base and vendors was also problematic. AMC personnel are highly dispersed geographically and diverse in terms of subject focus, which worked against a centralized effort to procure industry standards and specifications for the enterprise. Because of these challenges, the team faced three key barriers:

- *A cultural barrier against centralized funding of a common-use information source.* The culture of decentralized funds and attendant territorial control resulted in pushback at the outset and unresponsiveness when questions of funding level, contract amount, and so on, were first presented to the field. Effective research and Army Contracting Command (ACC) support brought to light the true cost of doing business.
- *A cultural barrier of "we've never done this before."* Overcoming this barrier required educating each area or level of the chain of command on the program's intent and purpose and on implementation plans. The fact that this was a subscription contract versus a service contract required considerable explanation to decision makers.
- *A monetary barrier—no new funds.* The team overcame this barrier by using existing funds in a unique way to force a competition and develop a consolidated contract for the enterprise.

About the Award Winner

The Army team consisted of Tim Edwards, Gloria Miller, Paul Fritts, Barbara Bishop, and Cynthia Lee, all located at Redstone Arsenal, AL.

Tim Edwards, the team lead, fostered the collaboration among the AMC Standardization Office (AMC G4/7/9), Resource Management (AMC G8), AMC staff, customers, libraries, and vendors. He also coordinated research activities, wrote the CBA, and developed the SOW for contract competition.

Gloria Miller researched contracts; interfaced with ACC; and developed and managed spreadsheets detailing contract actions, funds, points of contact, and appropriation categories.

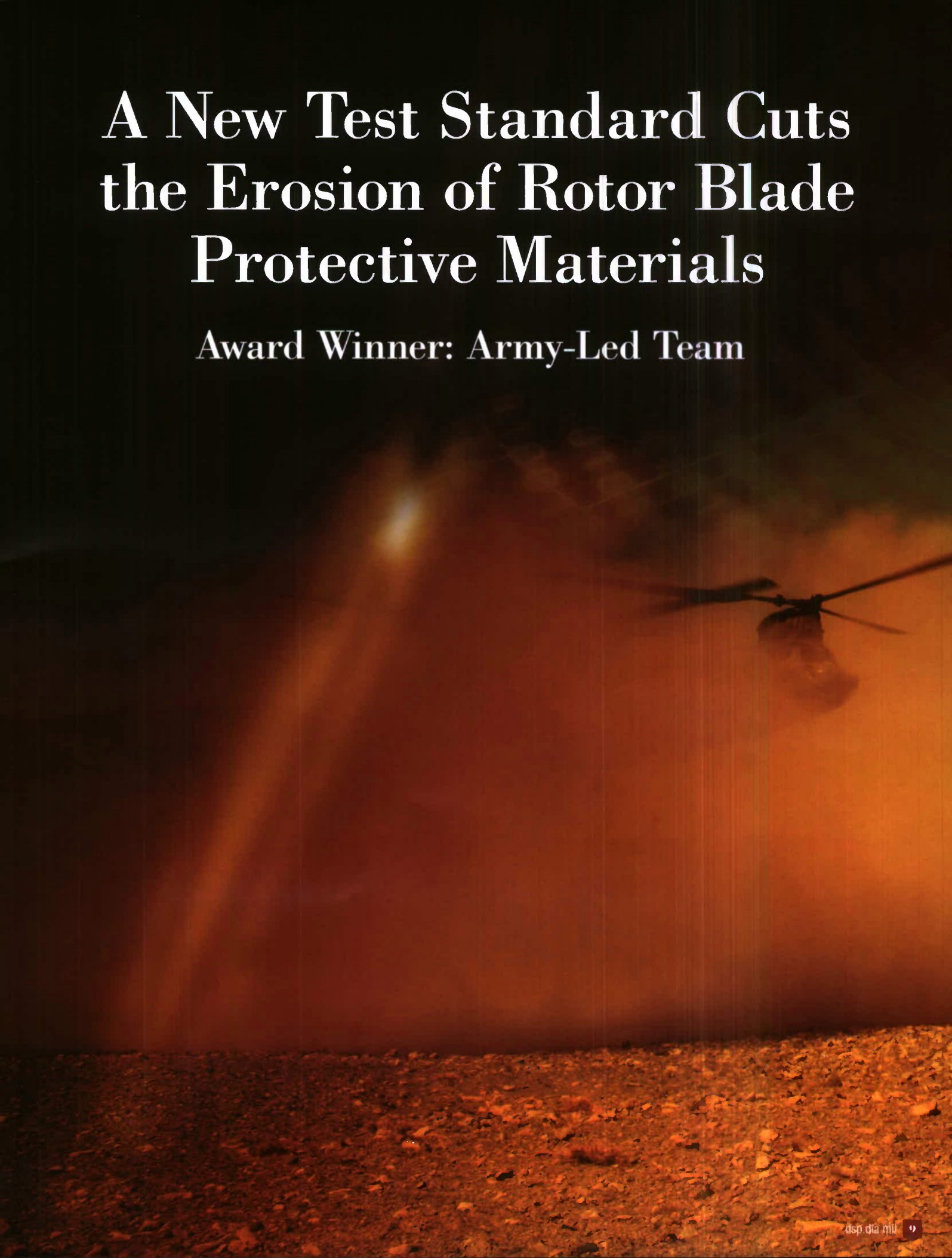
Paul Fritts, the contract program manager, provided research support for identifying user requirements, tracked usage and costs, and provided customer support and training. He also coordinated customer, vendor, and information technology requirements to develop the online portal to access standards and specifications.

Barbara Bishop provided budget support and coordinated with resource managers. She also provided expertise on funding lines and appropriations.

Cynthia Lee supported the development of the contract and coordinated the contract action and competition.

A New Test Standard Cuts the Erosion of Rotor Blade Protective Materials

Award Winner: Army-Led Team



An Army-led team, with representatives from four organizations, developed a test method, and the accompanying military standard, for measuring the resistance of materials used on the leading edge of helicopter rotor blades to protect them from particle or sand erosion. The test also is used for assessing the durability and reparability of these protective materials in DoD-unique environments. These materials may be in the form of inserts, leading edges, paints, overlays, coatings, or other surfacing techniques that protect the base material from its environment. This standard test measures the amount of material eroded from a stationary specimen by particles accelerated in a high-speed gas jet that replicates the velocities and impingement angles at the rotor blade tip. Implementation of the test standard will significantly increase the "time on wing" of protective systems, thereby increasing the duration between repair intervals and reducing the frequency of removal and replacement procedures—all of which are costly and labor intensive.

Background

The conflicts in Southwest Asia (SWA) have taken their toll on Army aviation components exposed to the harsh environment. In particular, erosion of leading-edge airfoils on helicopter blades due to sand impacts has been one of the costliest wear problems for U.S. Army aviation, as well as one of its largest logistics and maintenance burdens.

Because leading edges are a structural component of a rotor blade, erosion damage outside of the replaceable nickel strip cannot be repaired or replaced, which results in scrapping the blade. When the underlying metal is exposed, erosion causes the loss of structural material, which could ultimately lead to corrosion due to moisture migration. A more immediate threat occurs when sand impacts unprotected metal blades at high velocity, which can create sparking—a "halo" or "corona" referred to as the Kopp-Etchells effect. This effect is highly undesirable during nighttime operations.

Kopp-Etchells Effect

Erosion damage has resulted in the excessive consumption of rotor blades. At a 2003 rotor blade summit, the Army reported a rotor blade demand rate for the AH-64, CH-47, and UH-60 during the previous 12 months, which included the invasion of Iraq, totaling more than $189 million. The demand for new blades is attributed largely to the need to replace rotor blades degraded by sand erosion. New blades can cost up to $500,000 per helicopter. The value of rotor blades at risk in SWA is an estimated $328 million.

Problem/Opportunity

The erosion-resistant protective material used on rotor blades directly affects aircrew survivability and mission completion. However, no standard test method, either military or commercial, was available to evaluate the sand erosion performance of rotor blade protective materials. Lacking a standard, suppliers would test materials in any number of different ways, if they even bothered to test them at all. The velocity of the particles, the sand concentration, the impingement angle, and the comparability of the test media to operational conditions were unknown. Suppliers would submit test data for grit blasting their coatings at a 90-degree angle with aluminum oxide media, not quartz sand, that could not be compared to aircraft requirements. Many times, these proposed materials were found to be subject to more erosion than the base blade material.

To address this problem, the Materials Branch of the Army's Aviation Engineering Directorate asked the Army Research Laboratory (ARL) to undertake a project aimed at subjecting rotor blade leading-edge materials to sand erosion testing.

Approach

The concept for this project was that the results of the sand erosion testing would be used only to compare alternatives with each other, not to determine the optimal alternative or the best overall alternative. More specifically, the ultimate goal was to enable comparisons of the performance of emerging coatings and protection systems to the performance of the baseline materials in order to find alternatives that may reduce maintenance hours due to sand erosion, as well as provide longer field life.

Originally, the ARL-led team envisioned a sand erosion database, but quickly recognized the need for a standard method for testing the durability and reparability of candidate rotor blade protective materials in realistic DoD-unique operational environments. To simulate the SWA operational environment in a laboratory, the team needed to find test media (particles or sand) that have characteristics similar to the sand in SWA.

Studies have shown that the sand in SWA is aggressively erosive as a result of being "geologically fresh." After characterizing various media readily available in CONUS, the team selected crushed quartz sand used for golf course bunkers as its test media. Golf course sand was shown to be equivalent in size, shape, composition, and angularity compared with sand samples from various locations in SWA. Therefore, it would produce erosion damage like that produced during operations, a key requirement of the test protocol.

Next, the team selected a number of different samples to be subjected to solid particle (sand) erosion testing. The substrates were selected to represent the majority of materials found on Army aviation rotor blades in the field today, as well as the conditions seen in the field. Examples of these baseline materials are elastomers, other polymers (including reinforced plastics and composites), metals (including metal matrix composites), ceramics, and coatings.

The team used the Particle Erosion Test Facility at the University of Dayton Research Institute to test the different materials. In addition to assessing their erosion performance, the team addressed the effect of impingement angle on the rotor blade coatings. Testing showed that the critical angle for sand erosion differed based on the type of material tested. Polymers eroded faster at 30 degrees, while metals eroded faster at 45 to 60 degrees. The team also researched the erosion resistance of state-of-the-art candidate materials such as bucky paper epoxy, multilayered titanium/titanium nitride coatings, advanced ceramics, and urethanes.

After fine-tuning and validating the test protocol and analyzing the results, the team drafted the standard. The standard includes provisions to test new materials and numerous impingement angles so the material is subjected to the maximum erosion angle on the leading edge of a blade.

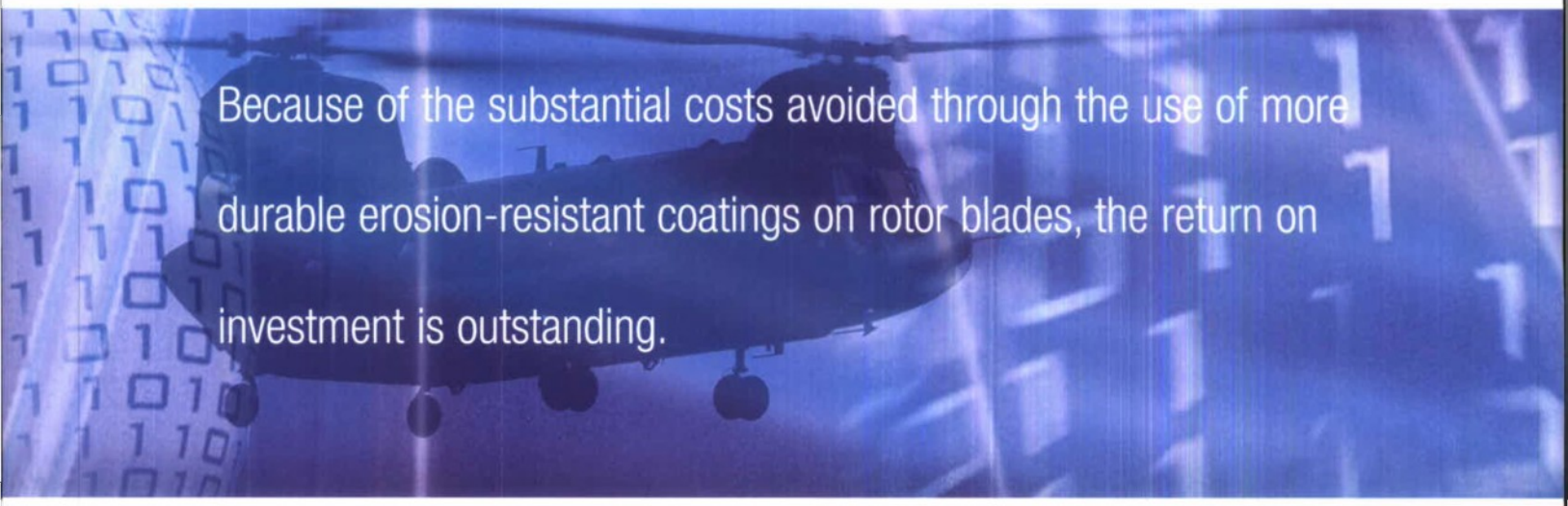
The standardization office (Army-MR) coordinated the draft standard with industry and government representatives to gain their input. The draft underwent several iterations before it was submitted for approval. Members of the team also made presentations to the DoD Rotorcraft Erosion Working Group and the Joint Council on Aging Aircraft. The team made the final decision to accept or reject each specific comment made by the various reviewers. The final test standard, MIL-STD-3033, "Particle/Sand Erosion Testing of Rotor Blade Protective Materials," was approved on July 28, 2010, and published on September 30, 2010.

Outcome

The test standard provides a reliable means for evaluating rotor blade erosion materials available from different suppliers to compare their performance. Tests can be run on 16

different samples at a time, allowing for numerous materials to be tested in a short amount of time and at a reasonable cost. Six airfoil samples can also be run in the sand erosion rig prior to testing in a rain erosion rig for combined sand/rain erosion exposure. Various impingement angles can be tested (between 20 and 90 degrees). Finally, the standard provides a method for evaluating the performance of the coating by mass loss, volume loss, and failure of the coating. This provides flexibility to evaluate polymer coatings that gain weight due to sand entrapment, metallic coatings whose mass loss is easy to measure, and thin film coatings, such as a diamond coating, whose mass or volume loss cannot be easily measured.

Implementation of the standard by the military services, as well the U.S. Coast Guard, will improve readiness. More specifically, the standard will allow the best materials to be used, which will significantly increase the "time on wing" of protective systems, thereby increasing the duration between repair intervals and reducing the frequency of costly and labor-intensive removal and replacement procedures.



The cost of developing the standard was twofold. Developing the data, such as particle size, velocity, and shape of the sand particles, cost about $40,000, and completing the administrative portion of the project (writing, coordinating, reviewing, evaluating comments, and finalizing the standard) cost about $35,000. Because of the substantial costs avoided through the use of more durable erosion-resistant coatings on rotor blades, the return on investment is outstanding.

Current Status

MIL-STD-3033 is available from ASSIST at https://assist.daps.dla.mil/. This test standard can be referenced in the Aviation Engineering Directorate's airworthiness qualification plans that define the requirements to qualify erosion coatings to be put on Army aircraft.

This test standard does not, on its own, qualify a material for application onto a rotor blade. Qualifying a material will require many other characterizations such as additional erosion testing (whirling-arm sand, rain, combined particle/sand/rain), adhesion, large particle impact, impact (simulated lightening strikes), hydrolysis, solar radiation, oxidation, extreme temperatures, temperature shock, fungus, salt fog, electromagnetic compatibility, thermal conductivity, fluid compatibility, radar cross section, and integration onto an aircraft. Operational experience has shown that a variance exists between the two erosion mechanisms of particle/sand and rain. Therefore, additional qualification tests for combined particle/sand/rain erosion tests are suggested. Finally, no new coating or material candidates can interfere with the performance and operational requirements of the rotorcraft. Therefore, the qualifying organization must define the specific requirements to fully qualify a material for overall acceptance.

Challenges

The biggest problem associated with the development of MIL-STD-3033 was insufficient standardization funding. Because standardization funds were limited, completion of this project was extended by almost 2 years. Other aspects of this effort—for example, characterizing test media, updating the users guide for the Particle Erosion Test Facility, and supporting the participation of members of the DoD Rotorcraft Erosion Working Group—were funded in part by the Joint Council on Aging Aircraft and the Office of the Secretary of Defense.

The next biggest problem was the approval process. At the beginning of the project, the team prepared the justification package for a DoD test method standard and forwarded it to the Army Standardization Executive for approval. The Army Standardization Executive denied the request, recommending, instead, that the test method be included in MIL-STD-810, "Environmental Engineering Considerations and Laboratory Tests." Letters of support to justify the approval of the standard as a standalone document were generated, along with a formal request from the ARL Standardization Executive. Ultimately, the team received approval to write the standard. However, when the document was ready for publication, the requirement to get the Army Standardization Executive's approval for publication caused additional delays.

About the Award Winner

The Army-led team consisted of Richard Squillacioti, Marc Pepi, Lynne Pfledderer, David Stone, and Andrew Phelps.

Richard Squillacioti, leader of the Rapid Technology Transition Team and leader of ARL's Specifications and Standards Office at Aberdeen Proving Ground in Maryland, led the standardization effort. He initiated the standardization project and obtained all required approvals beginning with the justification package for the Army Standardization Executive's approval through to the final publication of the document.

Marc Pepi, also from ARL, is acting branch chief of the Ceramic and Transparent Materials Branch and a member of the DoD Rotorcraft Erosion Working Group. He analyzed the test data, evaluated prospective coating/material protection systems, and prepared "Solid Particle (Sand) Erosion Testing of U.S. Army Aviation Rotor Blade Baseline Materials" (ARL-TR-4313), which was published in November 2007.

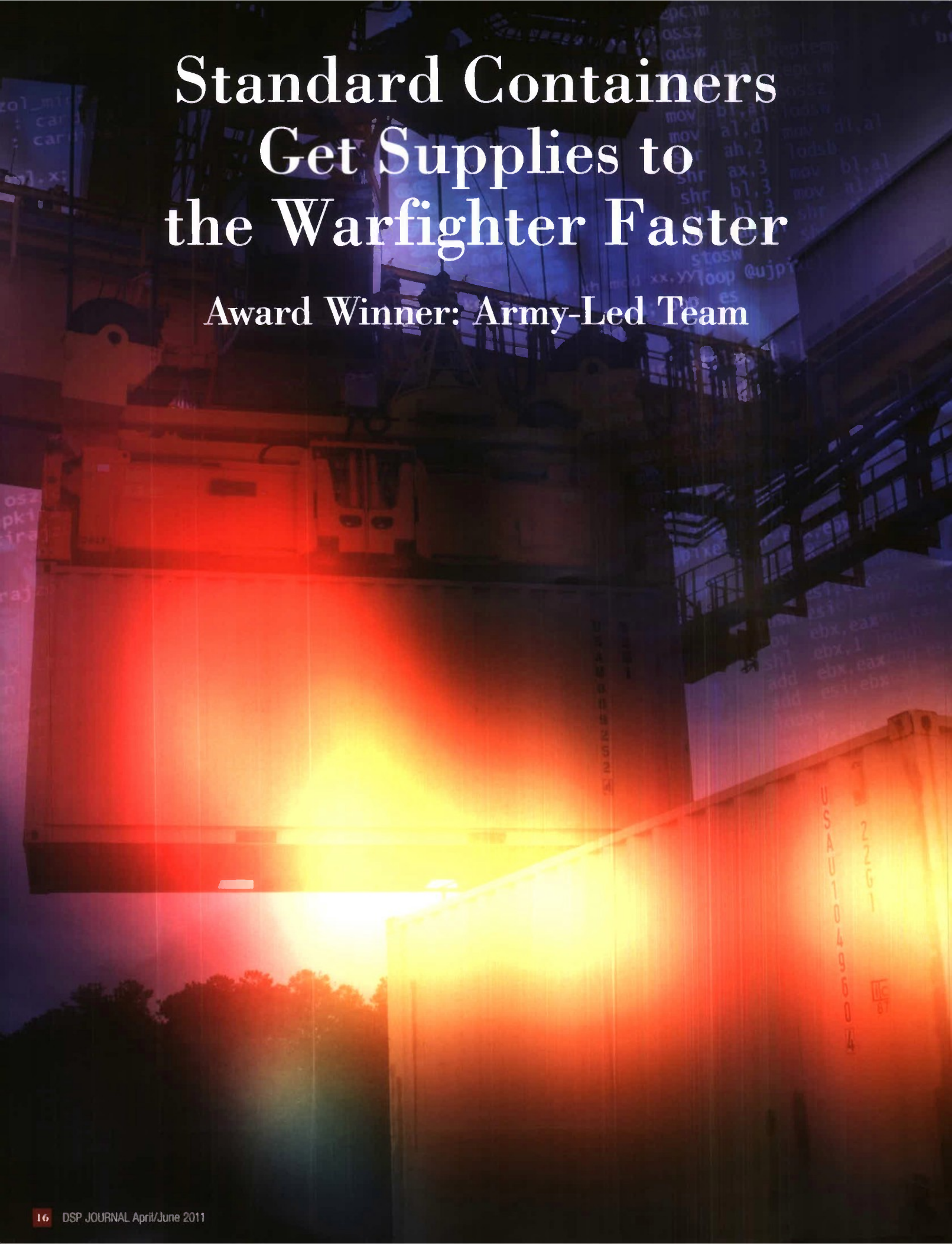
Lynne Pfledderer is a materials engineer in the Air Force Research Laboratory's Materials and Manufacturing Directorate, located at Wright-Patterson Air Force Base in Ohio, and the program manager for erosion research. She also co-chaired the DoD Rotorcraft Erosion Working Group. Ms. Pfledderer brought together DoD industry experts in areas such as materials engineering, meteorology, geology, and petrography to help with the project.

David Stone is a materials engineer in the Aviation Engineering Directorate at the U.S. Army Aviation and Missile Research, Development and Engineering Center at Redstone Arsenal in Alabama. He initiated and funded the original study to qualify and standardize the particle erosion test. In addition, Mr. Stone co-chaired the DoD Rotorcraft Erosion Working Group.

Andrew Phelps, a senior research scientist in the Nonstructural Materials Division at the University of Dayton Research Institute in Ohio, assisted with updating the users guide for the institute's Particle Erosion Test Facility. Dr. Phelps managed the collection and characterization of dusts and sands from SWA.

Standard Containers Get Supplies to the Warfighter Faster

Award Winner: Army-Led Team



A multi-service team led by the Army Armament Research, Development and Engineering Center (ARDEC) demonstrated a Joint Modular Intermodal Container (JMIC) to enable rapid, efficient, and seamless handling and delivery of military supplies. JMIC was a component of the Joint Modular Intermodal Distribution System (JMIDS) Joint Capability Technology Demonstration (JCTD). The JMIDS team also supported the development and approval of a JMIC standard, MIL-STD-3028, that establishes general design guidelines and associated tests for JMICs. The JMIC is collapsible for efficient storage, can be reassembled without tools, and is easily locked for cargo security. It is compatible with ISO containers, Palletized Load System flatracks and Containerized Roll-In/Roll-Out Platforms, 463L pallets, and the current fleet of tactical trailers and trucks. Interlocks secure JMICs to each other and, in the future, to platforms and transportation vehicles equipped with JMIC restraint systems. JMICs are already saving lives by reducing the number of convoys required to support operational units. Also, DoD is realizing significant savings, much like the commercial world did when it adapted the ISO container, due to the consolidation of supplies in a common package and the reduction of packing and dunnage materials used to secure cargo.

Background

Each military service—Army, Navy, Marine Corps, and Air Force—provides for its own logistics support. The services, as well as the Defense Logistics Agency (DLA), manage supplies and track assets. The U.S. Transportation Command (USTRANSCOM) provides the transportation (airlift and sealift) resources and tracks supplies while in transit. The combatant commanders are responsible for logistics and for directing distribution in the operational and tactical components to meet military objectives.

In the early 2000s, the services, DLA, and USTRANSCOM recognized the potential for significant gains in logistics efficiency and effectiveness by moving to standardized modular shipping containers across the services to improve the intermodal compatibility of transportation platforms in all three transportation modes (air, land, and sea).

Problem/Opportunity

The timely arrival of commodities and supplies to warfighters is critical to mission success. This is a constant challenge, however. The military transportation infrastructure is a collection of independent, specialized platforms, containers, and material handling equipment. Cargo flow is typically hampered by packing, loading, unloading, repacking, and reloading at various transshipment points. This contributes to major shipment delays and the delayed arrival of goods to the warfighter. Furthermore, the location, contents, and condition of each package's items are not typically monitored or tracked accurately, if at all. In many cases, containers loaded with critical items arrive at forward logistics nodes, only to await distribution. In addition, each service uses disparate types and sizes

of ISO containers and non-ISO containers and packaging. These differences require multiple means of material handling across the services and the commercial sector.

Approach

The JMIC concept was originally championed by the Army and the Navy under the auspices of the Joint Intermodal Logistics Working Group. The four service chiefs endorsed the concept in a 2005 memorandum to the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the services, the combatant commands, the acquisition commands, and DoD agencies. The memorandum specifically addressed the value of standardized common packaging and containers that "reduce cargo handling which results in faster distribution with less in-transit losses."

To determine requirements for the JMIC, the Army-led team held a quality functional deployment review with all technical and operational stakeholders. Subsequently, three prototype JMIC designs were developed and tested. In a down-selection process, the Navy design (being developed for the Operational Logistics program) was chosen for use in the JMIDS JCTD, which evaluated three technologies: JMIC, plus a Joint Modular Intermodal Platform and Automated Identification Technology. The team awarded a prototype production contract for delivery of 968 JMICs to be used in the JCTD.

The JCTD included three Military Utility Assessments (MUAs) demonstrating (1) depot-to-depot movement and Army and Marine Corps movement of class V configured loads from the ammunition transfer holding point to field battery operations; (2) Navy land, port, shipboard, and ship-to-ship operations; (3) Army unit move/supply distribution, retrograde, and air and helicopter delivery; and (4) Marine Corps unit deployments. In these assessments, the JMIDS technologies replaced the current methods of packaging, consolidating, and tracking goods. The MUAs used land, air, and sea transportation assets to carefully evaluate handling, movement, tracking, and storage operations of many commodities at a wide variety of logistics nodes. In addition, the intermodal capability of JMIDS was evaluated in a series of five technical demonstrations. JMICs were loaded and transported on military and commercial air transport planes, military and commercial trucks, and naval logistics resupply ships. Considering feedback from the MUAs and other evaluations, the team further refined the JMIC design.

In FY07, JMIDS was evaluated for air, land, and sea operations in a Coalition Warfare Program demonstration conducted with the United Kingdom. In FY08, an extended user evaluation (EUE) of JMIDS was conducted in Operation Iraqi Freedom. The Army's 7th Sustainment Brigade used JMICs in resupply operations between the Supply Support Activity (SSA) and forward operating bases. In addition, JMICs were used at Defense Distribution Depot Kuwait in depot operations and for shipments to SSAs.

Using data collected in the demonstrations, MUAs, and EUE, the team analyzed the impact of JMICs in joint service distribution scenarios and completed a business case analysis for three Army operational scenarios: unit deployment class V movement from the ammunition transfer point to the weapon system, from the in-theater depot to the SSA, and from the SSA to forward operating bases.

Team members, as part of the USTRANSCOM Joint Intermodal Working Group (JIWG) Standards Committee/Joint Standardization Board (JSB) for Intermodal Equipment, led efforts to draft and staff MIL-STD-3028, which covers the minimum JMIC requirements and establishes the general design (a reusable container with a top panel assembly, a pallet base, two side-access panels, and two side panels with post assemblies), interface requirements, and associated tests for specialized shipping configurations used by DoD. MIL-STD-3028 was approved by DSPO in July 2009. This standard is intended to be used as the basic reference document in all specifications and standards prescribing performance requirements to be applied to a shipping container, configuration, or platform.

The team led a cross-service integrated product team (IPT) in drafting a JMIC Capability Development Document (CDD) that identifies required operational performance attributes and then staffed the CDD with the services and the Joint Staff. The Logistics Joint Capabilities Board approved the JMIC CDD in May 2010. CDD approval enabled the JMIC to enter the formal acquisition process at pre-Milestone C.

The team completed the Technical Data Package for the JMIC 3.0K (285 lb tare weight, 3,000 lb capacity), transitioning it to the Army Product Manager for Force Sustainment Systems (PM FSS). In addition, the team designed a light-duty JMIC 1.5K (190 lb tare weight, 1,500 lb capacity) and transitioned it to the Marine Corps Program Manager for Expeditionary Power Systems (PM EPS).

Outcome

The business case analysis for three Army operational scenarios showed that an investment in JMICs will pay for itself through cost avoidance over the current operation in less than 4 years. The returns on investment for the three scenarios range from 14 to 65 percent. Furthermore, the use of JMICs could reduce the number of supply convoys and air sorties required by 25 to 43 percent due to more efficient loading of trucks and cargo aircraft.

The Navy anticipates savings in manpower for loading and handling operations and in lumber and steel banding materials if JMIC replaces pallet crates and security crates aboard several classes of ships (CVN, T-AOE, T-AKE, LHA, and LHD), as well as at

ordnance-loading Navy shore stations. JMICs can be used for segregation and storage, intrastation trucking, and combatant ship loading at the shore stations. Aboard ships, JMICs can be used for underway replenishment and stowage operations.

Other overall JMIC benefits are reduced personnel time for handling cargo, increased transportation capacity, increased force protection and safety by reducing risk exposure, improved physical security and protection for contents, reduced dunnage requirements, reduced storage footprint when stacked, reduced tie-down requirements, and improved replenishment and helicopter lift operations.

The use of JMICs is affecting the way DoD moves and handles supplies today. JMICs are already saving lives by reducing the number of convoys required to support operational units. JMICs are also saving money through the consolidation of supplies in a common package and the reduction of packing and dunnage materials. Finally, the standardized JMIC is seen as a key enabler for joint operations in the years to come. Therefore, JMIC features are affecting ship, truck, and airplane designs under consideration in the United States and by coalition partners.

Current Status

Approximately 7,400 first-generation JMICs are in the field or on order across all of the services. The Army PM FSS will complete JMIC type classification and full material release and enter JMIC 3.0K production in FY11; all services will be able to purchase the JMIC 3.0K through the Army's JMIC contract. Also, the Marine Corps PM EPS plans to have the JMIC 1.5K enter production in FY11.

Interest in JMIC continues to grow. The Army ARDEC has coordinated a project agreement to allow the Ministry of Defense of the Republic of Singapore to demonstrate and evaluate JMIDS technologies for its operational use in FY11. Australia, Germany, Canada, Italy, and Chile also have expressed interest.

Army ARDEC is working with the National Training Center's Expeditionary Training Capability Team, which is interested in using JMIDS technology for transporting support supplies and equipment to training sites. The Army medical community is developing a JMIC-compliant container for transporting high-value medical supplies. New construction Navy T-AKE ships are being outfitted with JMICs. Emergency management organizations that have a need to securely store and rapidly deploy medical and other supplies in adverse environments also are interested in JMIC.

Technology development efforts are under way within the Army, Navy, and Marine Corps to develop JMIC-compatible restraint systems for truck platforms and ship decks

that will permit rapid securing of JMICs without additional tie-down equipment. The Army is developing a new ammunition packaging family of common JMIC-compliant, interlocking, modular containers capable of packaging conventional ammunition items. They will lock to each other and to a JMIC-like pallet base and top to eliminate the need for banding and strapping.

In short, the team's efforts have produced far-reaching and lasting effects upon DoD and, even more important, on the soldiers, marines, and sailors that fight our nation's battles.

Challenges

JMIDS technologies were developed to overcome inefficiencies in the origin-to-destination cargo delivery systems for all of the services. Given the size and complexity of the Defense Transportation System, full implementation of the JMIC standard across all stakeholder organizations and services will be a significant challenge. The JMIDS team has established a solid foundation for the implementation of the JMIC standard. With Army, Navy, and Marine Corps JMIC acquisitions beginning in FY11 and with continued joint service cooperation, the DoD logistics system will increasingly realize the interoperability benefits of the JMIC standard.

About the Award Winner

The Army-led team consisted of Douglas Chesnulovitch, Roy Smith, Jay Abernathy, John Weed, and Gary Adams.

Douglas Chesnulovitch, from ARDEC, headquartered at Picatinny Arsenal in New Jersey, was the technical and transition manager for the JMIDS JCTD. His responsibilities included gathering technical and operational requirements and managing the design, development, testing, and procurement of prototype hardware.

Roy Smith, from Naval Surface Warfare Center, Indian Head Division, Detachment Earle, in Colts Neck, NJ, served as deputy technical manager for JMIDS and chaired the JIWG Standards subcommittee/JSB for Intermodal Equipment that documented JMIC standard dimensions and interfaces and developed MIL-STD-3028. He also directed the follow-on program to refine the JMIC design for production.

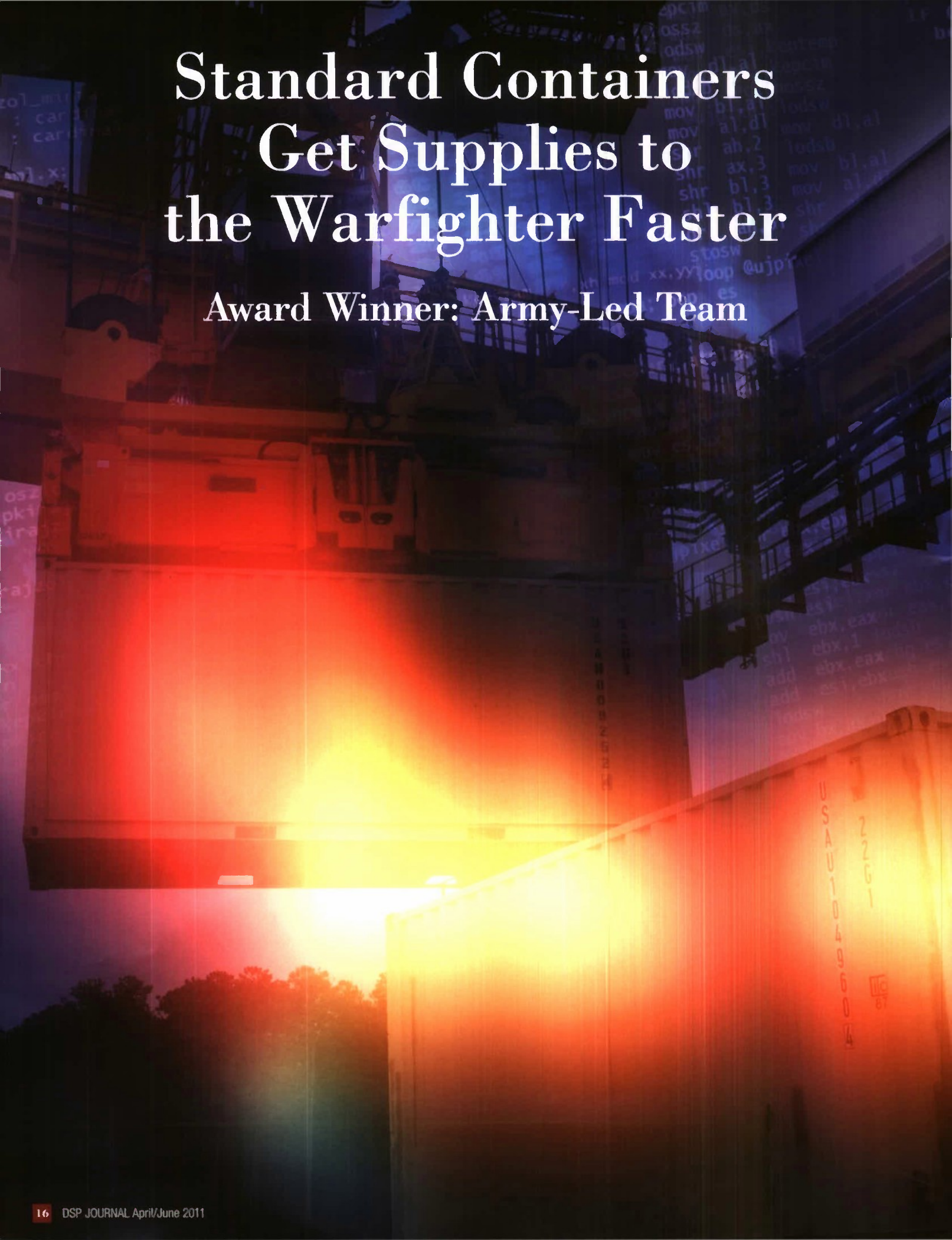
Jay Abernathy, from the Army Combined Arms Support Command, at Fort Lee, VA, served as a JMIDS deputy operational manager. He led the planning and execution of the Army-related MUAs, the Coalition Warfare Program demonstration, and the EUE in Operation Iraqi Freedom.

John Weed (COL Ret.), from ARDEC, served as JMIDS transition manager. He led efforts to establish a transition path, coordinate a transition memorandum of agreement with Army PM FSS, and develop draft acquisition documentation for JMIC. He also chaired the joint service IPT that developed the JMIC CDD.

Gary Adams, USTRANSCOM, served as JMIDS operational manager. He led joint service efforts to design, coordinate, and execute all MUAs, and he drafted the MUA report outlining USTRANSCOM's support for JMIC's development and fielding. Mr. Adams also chaired the Joint Intermodal Working Group that oversaw the development and approval of MIL-STD-3028.

Standard Containers Get Supplies to the Warfighter Faster

Award Winner: Army-Led Team



A Navy-led team developed a Joint Counter Radio-Controlled Improvised Explosive Device (IED) Electronic Warfare (JCREW) system of systems (SoS) that will defeat evolving radio-controlled IEDs globally, with less interference with friendly systems and significantly reduced operating costs. The SoS consists of a dismounted (manpack) system, mounted system (ground vehicle or boat), and fixed-site system (temporary/mobile, semi-permanent, and permanent). The JCREW SoS uses open architecture, with well-defined common standards, and can be upgraded easily. The system is capable of functioning in a standalone mode (as do legacy systems) or in a networked mode. JCREW SoS networking in an operational environment will facilitate configuration management and remote loading, as well as mission-representative command and control to achieve mutually supportive or cooperative JCREW operations. The networked JCREW SoS will also enhance interoperability and compatibility with friendly forces' systems that use the same or nearly the same portions of the electromagnetic spectrum. In short, the JCREW SoS can be employed globally throughout the operating environment, supporting U.S. force dominance over the electromagnetic spectrum to defeat radio-controlled IEDs.

Background

Today's battlefield is a challenging electromagnetic environment. DoD's CREW effort has met urgent and compelling operational requirements to counter the threat posed by IEDs and reduce combat fatalities during Operation Iraqi Freedom, Operation New Dawn, and Operation Enduring Freedom. The CREW effort (largely funded by the Joint IED Defeat Organization) has resulted in a number of procurements over the past several years. Those procurements have included the JCREW office's Quick Reaction Dismounted CREW systems, Mounted CREW Vehicle Receiver Jammer systems, and Mobile Multi-Band Jammer CREW systems; SYMPHONY Coalition/partner nation CREW systems; and service-specific CREW systems such as the Marine Corps Chameleon and Hunter and the Army Duke. The CREW procurements to date have focused on the rapid deployment of systems to address U.S. Central Command's urgent needs. Today's systems have become very effective against today's threats but at significant cost (procurement and sustainment).

Problem/Opportunity

Today's CREW systems have met defined joint urgent operational needs, but under certain conditions, can disrupt electronic communications because their electromagnetic signals are not compatible with those of other systems used on the battlefield. For example, CREW systems may compete with communications systems and myriad other signals due to electromagnetic interference, whether intentional, unintentional, or naturally occurring. Adequate compatibility and interoperability have been achieved but in ad hoc and sometimes inefficient ways.

CREW systems need to be updated periodically with the latest loadware, software, and firmware. These periodic updates require a close-in support structure. Such support is not economically practical for worldwide deployment of CREW systems and is a huge supportability cost driver.

To address these concerns, and under the guidance of DoD Directive 5101.14, the Navy undertook the joint development of the JCREW SoS technology to defeat future global threats. Per the directive, the Navy is DoD's Executive Agent for ground CREW technology.

Approach

The Navy-led team, facing an aggressive 24-month acquisition timeline from Milestone B to Milestone C, brought a wealth of experience to the JCREW program. Among other things, the team did the following:

- Developed an integrated program management plan describing the overall program structure; deliverables; related management plans and procedures; and methods used to plan, monitor, control, and improve the program's development efforts
- Helped the requirements community draft a Capability Development Document (CDD), which was approved by the Joint Requirements Oversight Council (JROC) in December 2008
- Translated the CDD requirements into a performance specification that articulates the importance of interoperability, compatibility, and standardization through the use of open, defined key interfaces and development of an information support plan and DoD Architecture Framework products to meet interoperability and net-ready requirements
- Communicated with industry to identify the best ideas for achieving an open system that would enable rapid response to warfighter requirements
- Held a series of industry days to answer questions and further clarify the performance specification
- Prepared technology readiness reviews that allowed the team to enter Milestone B
- Led a team of DoD experts in the analysis of alternatives, which was instrumental in defining the reasonableness of potential capabilities and technologies and became the basis for defining key performance parameters
- Undertook a competed multivendor development contract for system development and demonstration with two JCREW system developers.

The team identified three areas in which standardization was key to the JCREW program's success: standardization among compatible systems on the battlefield to ensure

interoperability; use of commercial standards and interfaces and a networked, expandable, modular open design architecture to facilitate system upgrades; and use of a standard program management process to keep this fast-paced program moving forward on schedule and within budget.

INTEROPERABILITY

The JCREW SoS is designed to be interoperable and compatible with high-density U.S. and friendly forces' systems that use the same nearby electromagnetic spectrum. Compatibility is achieved on the receipt and transmission of signals by the system, on the software blocking and interfaces, and between the systems for human factors—that is, the system has the same look and feel whether mounted (vehicle or boat), dismounted (manpack), or fixed (security entry points and other temporary/mobile, semi-permanent, and permanent installations). Interoperability is achieved between the Electronic Warfare Coordination Center JCREW control module and JCREW devices for updating loadware (threats, suppression techniques, and mission tasking data), software, and firmware on JCREW systems. Details are classified. Services acquiring JCREW systems would inherently be compatible with other services' JCREW systems if/when they find themselves on a common battlefield.

SYSTEM UPGRADES/OPEN ARCHITECTURE

In addition to its emphasis on battlefield compatibility, the JROC determined that the JCREW SoS must be interoperable and net centric/net ready. The value of a net-centric/net-ready system is that the loadware, software, and firmware can be distributed via radio waves over a secure network, thus eliminating the need for close-in support dedicated to this function. Other housekeeping actions, such as the transfer of logs and built-in test system status, can also be executed over the air. These information exchanges may happen before, during, or after a mission, depending on tactical scenarios.

Because countering the threat is tied to advances in the communication devices available to the adversary, the team determined that the system must be designed on an expandable, modular open architecture, which will allow for incremental updates to keep up with the evolving threat and advances in technology. Key to this plan is to use commercial standards for circuit card assemblies, backplanes, and a modular, expandable plug-and-play software architecture that uses industry open standards.

Information exchanges with other co-resident systems on digitized platforms were designed to occur via a set of function-specific byte-oriented messages consisting of the Common Link Protocol and standard Joint Variable Format Messages. The system was designed with a standard global positioning system's small serial interface, required to

meet MIL-STD-461, "Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment"; standard four-hole vehicular mounts for antennas; standard-issue military batteries; and human factor standards. In addition, all design elements, interfaces (plug and play), and connections were required to be nonproprietary, open, and published sufficiently for the subsequent open and noncompetitive acquisition of those elements from any source.

All circuit card assemblies and backplanes were designed to VITA-48 standards for ruggedized commercial electronics. Other standard interfaces to general-purpose processors and field-programmable gate arrays (FPGAs) included Ethernet, RS232, RS422, SRIO, and USB interfaces. The same keypad was selected for similar feel between systems within the SoS. All three systems (mounted, dismounted, and fixed) use a common architecture with nearly identical FPGA designs.

PROGRAM MANAGEMENT PROCESS

All program managers know that requirements creep, scope creep, and change orders can cripple program execution. To keep this fast-paced program on schedule and within budget, the Navy program team recognized the need to establish controls via a standard program management process. Therefore, the program manager (PM) implemented business rules to facilitate and track the work as completed by the government teams and contractors. At program initiation, the PM directed the government teams and contractors to standardize their long-range planning and reports and to draft an integrated master schedule (IMS), a performance measurement baseline, and a work breakdown structure that links discrete work packages to the detailed IMS.

Program controls include three levels of reviews and active risk management, opportunity management, and design to unit production cost, with a focus on underfunded and unfunded tasks. All information is documented in a central planning tool, and the PM is briefed on all work packages and risks prior to the execution year. The PM also receives monthly briefings on the execution of all work packages and monthly reports describing the work accomplished. These reports provide a snapshot of work accomplished across 10 government providers.

Outcome

The JCREW systems will provide commanders of joint forces with a capability to counter radio-controlled IEDs without risking the communications of other systems. Technologically superior to earlier systems, the JCREW SoS has increased spectrum coverage, more power, and effective networking capability, among other attributes. The JCREW systems will meet key performance parameters specified by the JROC-approved CDD. By improving system performance and interoperability between and

among JCREW systems, and between legacy CREW systems, the JCREW SoS will reduce casualties on the battlefield.

Another important benefit, resulting from JCREW's open and modular design, is the reduction in design phases. Considering the current development costs, the Navy-led team estimated that the project will reduce development schedules by 6 to 12 months, with potential savings to the taxpayer of $20 to $50 million.

A significant economic impact of the design choices is net centricity and embedded training capabilities. These attributes are enablers for the JCREW SoS's smaller sustainment footprint and the reduction of logistics, training, and in-service engineering costs. JCREW will permit the services to replace closed architecture/non-modular/non-networked legacy systems at the end of their useful lives with much more capable systems incorporating technology that is easier to sustain and upgrade. The team estimated an annual avoidance of support costs totaling several million dollars for each military service due to the elimination of many forward service facilities and reduction of training and logistics requirements.

Current Status

In September 2010, the program successfully completed its Critical Design Review on time and within established cost thresholds. The developer delivered a prototype of each system and demonstrated the design standard interfaces, common open architecture, and modular hardware required by the performance specification. The JCREW program is on track to achieve a Milestone C decision within the next year and initial operational capability in FY13.

Current plans envision

- technology insertion updates every 3 years,
- technology refreshment every 6 years after start of low-rate initial production to account for obsolescence, and
- additional periodic updates as needed to account for the rapidly evolving threat.

Challenges

The key challenge was the accelerated schedule, with the temptation to cut corners to save time. This was unacceptable. Through the leadership of the PM, the team was inspired to help the developers achieve the open designs and modular approaches utilizing established industry standards. The team spent the necessary time with the developer's team to ensure it understood the government's requirements and to ensure the achievement of program goals: core performance, compatibility, interoperability, and easy upgradability to economically enhance capabilities and keep ahead of the global threat.

Standard business and reporting processes were instrumental to meeting the challenge and ensuring the success of the large, geographically dispersed team. These business processes were not popular upon implementation, but the team members recognized their benefits as they executed their work on the JCREW program.

About the Award Winner

The Navy-led team consisted of Mike Craft, Keith Plumadore, Bruce Strackbein, Adam Webb, and Jim Ryan.

Mike Craft, the assistant program manager from PMS-408 (the acquisition program office for CREW and explosive ordnance disposal programs, within Program Executive Officer, Littoral and Mine Warfare), helped the requirements community draft the CDD, was a major contributor to the performance specification, and worked with industry to find the best ideas to achieve an open system. He also advocated the use of standardized business processes, established several integrated project teams to help manage the work across multiple functional areas, and documented the processes in the JCREW integrated program management plan.

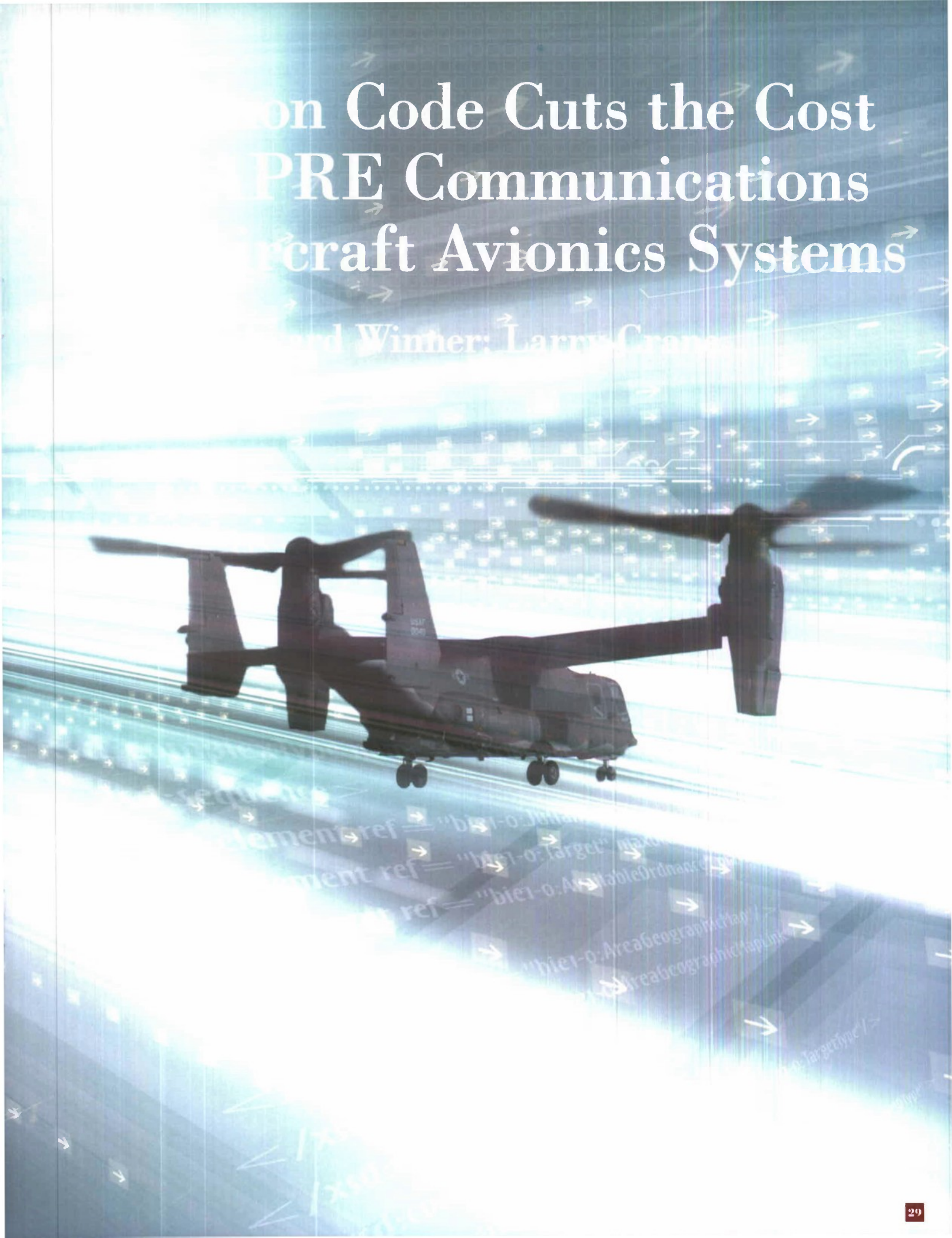
Keith Plumadore is from the Naval Explosive Ordnance Disposal Technology Division, a component of the Naval Sea Systems Command. As the lead systems engineer, technical direction agent, and expert on several of the legacy CREW systems, he was instrumental in the preparation for the technology readiness reviews that allowed the team to enter Milestone B. In addition, he led a team of DoD experts in the analysis of alternatives, technology assessment, and development of the system's performance specification.

Bruce Strackbein, from PMS-408, is an expert on CREW systems and technology in general. He was the lead within the CREW program office for reviewing the performance specification and was a major contributor to the JCREW CDD and analysis of alternatives. He served as the technical lead to the cost team during source selection.

Adam Webb, from the Army's Intelligence and Information Warfare Directorate within the Communications-Electronics Research, Development and Engineering Command, provided valuable expertise on platform interface control for the mounted system. He was instrumental in revising and clarifying the technical aspects of the performance specification, which reduced the overall risk to platform integration.

Jim Ryan is from PMS-408. His primary contribution to the project involved institutionalizing the standard project management tools, which included providing a study on a wide array of potential integrated digital environments for vendor deliverables and program documentation. He also assisted with the final reviews of the performance specification.

on Code Cuts the Cost PRE Communications craft Avionics Systems



Larry Crane, with the Common Aircraft Portable Reprogramming Equipment (CAPRE) program at the Air Force Materiel Command (AFMC), created an innovative approach to developing software for transferring mission-critical and other data from CAPRE to aircraft avionics systems. Now, instead of developing customized software for communicating between CAPRE and each individual aircraft avionics system, software developers can utilize a standard or common code template for all aircraft avionics systems that use a common communication structure. Mr. Crane and a small team of other CAPRE software developers came up with the concept when they found that 18 of the 29 avionics systems on the CV-22 Osprey use the same communication structure. Mr. Crane developed the software and firmware needed to make the common code possible on existing and new hardware, saving $2 million on the CV-22 Osprey project alone. Mr. Crane is applying the same concept to many different Navy aircraft, potentially saving the Navy $73 million and decreasing development time.

Background

Aircraft avionics systems, or line replaceable units (LRUs), require periodic software updates. These updates may involve fixing bugs, enhancing the capabilities of the existing software through reprogramming, or transferring mission-critical data such as operational flight programs and mission data files. Whenever the software is updated, it must be loaded into all avionics computers of the same type and mission. Typically, software has been loaded into avionics computers using customized loading devices generically referred to as Memory Loader Verifiers (MLVs).

The MLVs are being replaced by a new PC-based system, CAPRE. Some MLVs have a limited life due to parts obsolescence, and obtaining suitable replacements is expensive, because many of the circuit boards and supporting software on the MLVs are proprietary. Moreover, they require major rework to support the technological changes that inevitably occur with time. As a result, the life-cycle gap between the PCs and aircraft, whose service lives are extended through updates, continues to grow. For example, the F-16 has a history of more than 30 years of service, while PCs are usually outdated in 3 to 5 years. In the F-16's 30-year history, between 6 and 10 generations of computers have passed.

In contrast, CAPRE provides a long-term solution to bridge that gap. CAPRE is a lightweight standardized platform using commercial off-the-shelf hardware and software for collecting flight and equipment information, for reprogramming aircraft avionics systems, and for transferring mission-critical data into aircraft avionics systems. Furthermore, CAPRE uses government-owned, nonproprietary data and hardware that can be maintained by the vendor of choice. Finally, it can be easily updated because it is structured in a modular way through the use of Aircraft Adapter Groups (AAGs), which trans-

fer data between CAPRE and the LRUs. CAPRE's functionally focused configuration allows independent modification of the PC, weapon systems, and the AAGs for updates.

Problem/Opportunity

Each new connection between CAPRE and an LRU in the aircraft requires the development of an AAG. A CAPRE interface module translates the data from the USB format to one that works with the LRU. Inside the module, USB data coming from the PC are converted—by an EZ-USB chip running custom firmware—into signals that are fed into another chip. This chip then outputs the electrical signals that work with the required communication protocol, which are routed through the correct pins on an AAG interface cable that connects the interface module to the LRU. For each different LRU on a given aircraft, CAPRE needs new software and potentially new hardware and firmware to accomplish the CAPRE-LRU communication. Developing each AAG typically takes approximately 12–18 months of labor-hours and up to $700,000.

Typically, one AAG would be assigned to a software developer. That developer would create a way to get CAPRE and the LRU to communicate properly. Occasionally, the developer could use, as a baseline, code created for a previous project that was similarly configured. When AFMC's 520th Software Maintenance Squadron, D Flight, was assigned the task of developing CAPRE AAGs for the CV-22 Osprey, research showed that the majority of the LRUs on the aircraft used the same hardware interface and communication protocol: MIL-STD-1553B, "Interface Standard for Digital Time Division Command/Response Multiplex Data Bus," and Protocol B of MIL-STD-2217, "Requirements for Memory Loader/Verifier Multiplex Bus Interface with Avionic Systems." MIL-STD-1553B and MIL-STD-2217 Protocol B can be compared to how a telephone works. MIL-STD-1553B is like the telephone wire that carries the voice, and MIL-STD-2217 Protocol B is like the language someone is speaking into the phone. To put it another way, MIL-STD-1553B is the cable transferring data, and MIL-STD-2217 Protocol B is the format of the information traveling across the cable. Mr. Crane, who had encountered this communication structure on previous projects, proposed examining the possibility of combining the code for Osprey LRUs using that structure.

Approach

Early in the CV-22 Osprey's development cycle, a D Flight CAPRE team was assembled to create a solution for the Osprey's multiple software packages. The team conceptualized the idea that a standard or common code template could be created for the LRUs on an aircraft. That template would function like a form letter, in which just the name would change and the letter would be used again. On the CV-22, 18 of the 29 avionics systems, or LRUs, used MIL-STD-1553B and MIL-STD-2217 Protocol B.

Mr. Crane took on the task of creating the common code on a compressed schedule of 12 months. Development of the initial code, from concept to initial test, took 6 months, and testing took an additional 6 months. (The norm for AAG projects was 18 months.)

The CV-22 project was broken into phases. During the first year (2007), Mr. Crane was tasked with creating the common code template and using it to code seven AAGs. He had to continually modify the common code template to get it to work on all seven LRUs. To standardize and create the template, Mr. Crane needed to create new firmware for the EZ-USB chip inside the CAPRE USB1553 interface module, which acts as the bridge between the USB and MIL-STD-1553B interfaces. The data output from the EZ-USB chip is sent into a Data Device Corporation Enhanced Mini-Advanced Communications Engine (EMACE) chip, which provides the MIL-STD-1553B output capability. The EMACE op-codes in turn needed to be designed to transmit and receive data for MIL-STD-2217 Protocol B. In short, three separate entities—the EMACE op-codes, the EZ-USB firmware, and the common code template for the AAGs' software—had to be designed to collaboratively and asynchronously work to accomplish the load and verify operations. Mr. Crane consulted others, leveraged his experience, and researched the involved hardware, firmware, and op-codes for the particular chips used in CAPRE.

The initial common code was released in 2008 and is now used in the field. The second phase—utilizing the common code with another four CV-22 Osprey LRUs—was completed a year later. The last two phases of the CV-22 project—utilizing the common code with the remaining compatible LRUs—are being worked concurrently.

The common code template is not limited to only the CV-22 Osprey. Many aircraft use the MIL-STD-1553B and MIL-STD-2217 Protocol B configuration. This potential to expand the use of the common code template pointed the program to other services. In particular, Mr. Crane leveraged the common code during a demonstration of its capabilities for the Navy on an F-18. That demonstration resulted in the CAPRE program receiving $30,000 in seed money from the Navy for a prototype. Mr. Crane modified the common code template he developed for the CV-22 on a severely shortened timeline. He did the modifications in 1 month on a project that normally would have been bid as a 6-month task. The prototype was a success. Mr. Crane's common code approach allowed D Flight to take on a Navy workload to replace the Memory Loader-Verifier Set (MLVS). This new workload, called the Navy Program Loader, will cover more than 200 LRUs across 29 different aircraft.

Outcome

Using a common code for communicating with aircraft avionics systems will have a lasting impact through large cost savings, labor-hour savings, and decreased development

time. Instead of spending $700,000 and 12–18 months of labor-hours developing one AAG at a time, the common code idea allows for the creation of one template per protocol that ideally requires only minor modifications, if any, for each LRU. The common code idea involves approaching the AAG design on a protocol-by-protocol basis, instead of the LRU-by-LRU basis of the past. It entails creating a template for each of the protocols in such a way that it can be changed with minimal effort and time, so that it can be applied to as many similar LRUs on the aircraft as efficiently as possible instead of reinventing the wheel each time.

Mr. Crane made significant contributions to the CV-22 project that kept the project below cost and on schedule. He also accelerated the development process because his portion of the project needed less modification due to the standardized common architecture. Through his efforts, Mr. Crane saved $2 million and 36,000 in labor-hours on the CV-22 project. With those savings, the CAPRE team was able to provide the customer one extra AAG, a cost offset of $700,000, and supplied hardware cables, a $170,000 offset. The common code also made the CAPRE more efficient than the MLVs it replaced, in some cases cutting load times in half. In addition, CAPRE is user friendly for airmen in the field. It replaces the old equipment with its small LCD readouts and toggle switches with a laptop using Windows.

The common code template allowed D Flight to take on a Navy workload to replace the MLVS. Many Navy aircraft avionics systems use the MIL-STD-1553B and MIL-STD-2217 Protocol B configuration, so much of the common code template could be reused on the Navy Program Loader, even though the USB interface and interface module approach are no longer being used.

Without the common code, D Flight would not be able to take on such a large workload. Using the common code template idea will cut the time it takes to develop the software for each LRU. Across more than 200 different LRUs in 29 different aircraft, this code will potentially save the Navy more than $73 million over the old developmental approach. Through standardization, the common code template reduces costs on every job due to Mr. Crane's innovation.

Current Status

The common code template for CV-22 Osprey LRUs using MIL-STD-1553B and MIL-STD-2217 Protocol B is used in the field. The CAPRE program fielded the initial common code in 2008. In addition, the common code template has been in use for AAG development since 2008. Not only is it continually being modified and applied to more LRUs on the CV-22 project, but it is being used to standardize the Navy Program Loader.

Challenges

When the common code approach was initially discussed, the CAPRE team was concerned about anticipated, yet hard-to-predict, differences in the implementation of MIL-STD-1553B and MIL-STD-2217 Protocol B code within LRUs created by different manufacturers. Mr. Crane overcame the technical challenges, despite the team's concerns. One difficulty was ensuring that the data sent from the CAPRE laptop via the USB cable were compliant with transmission parameters defined by MIL-STD-1553B. Another difficulty was implementing the common code in such a way that it supported as many of the configurable parameters within MIL-STD-1553B and MIL-STD-2217 Protocol B as possible. Another major difficulty was getting the common code template to work on as many different LRUs as possible to follow MIL-STD-1553B and MIL-STD-2217 Protocol B, despite minor differences that were encountered during testing.

Mr. Crane also was able to resolve other very difficult coding obstacles. For instance, he created a complex and unique AAG that uses both the RS232 and MIL-STD-1553B interfaces. The capabilities of this AAG surpass those of both of the MLVs it replaced by combining their separate strengths—automated functionality versus a checksum verification—into a single package.

In addition to meeting the technical challenges, Mr. Crane was able to meet the compressed schedules for the development of the Osprey AAGs, as well as for the development of the Navy Program Loader prototype.

About the Award Winner

Larry Crane was a software developer with AFMC's 520th Software Maintenance Squadron, D Flight, CAPRE program. He designed and wrote almost all of the baseline code and firmware for the CV-22 Osprey common code project, and until May 2010, he continued to use the common code template as an advanced baseline for more AAGs, modifying it to make it more effective. Mr. Crane left the CAPRE program in May 2010 to be the software lead on the Navy Program Loader project. During the transition, he trained another software developer in the CAPRE program to use the CV-22 common code approach. While working the Navy Program Loader, he continues to apply the same tools and use the same common code template principle with the new workload.

Weapons Systems Provisioning Data and Standardization Complement Each Other

Award Winner: Beverly Wilson

Beverly Wilson, from Defense Logistics Agency (DLA) Land and Maritime, developed and implemented a process to identify and pursue part standardization opportunities. The process includes analyzing weapons systems provisioning data collected by the Defense Logistics Information Service (DLIS) to identify parts not covered by standardization documents, link ordering data, qualify items, and where appropriate, recommend actions to be taken to cover those items. To date, military activities have undertaken the development or revision of numerous specifications and standards documents, which will prevent the addition of at least 700 nonstandard parts in the inventory. Also, DLIS has updated technical data on 350 items, and qualifying activities have recruited new sources. The results are lower procurement costs, shorter acquisition lead-times, increased operational readiness, and a smaller logistics footprint. Moreover, these standardization actions will enhance full and open competition among the manufacturers of the parts; allow for greater interoperability among the military services; and improve the availability of the products by meeting quality, reliability, performance, and safety requirements. Savings related to this effort are on the order of $14.5 million.

Background

DoD's stated policy is to encourage and advance standardization, especially when it relates to critical weapons systems. In support of that policy, DSP's mission is to standardize like products and technologies and use a common set of specifications and standards.

Using standard parts—in particular, parts on the Qualified Products Database (QPD)—can shorten the acquisition process (because products must undergo long and sometimes highly complex evaluations and tests before they can qualify for the QPD), and it substantially reduces life-cycle costs. According to DSPO's SD-19, *Parts Management Guide*, published in September 2009, "the average total cost for adding a single new part into a system is about $27, 500": $12,600 for engineering and design, $1,000 for testing, $2,400 for manufacturing, $5,200 for purchasing, $1,200 for inventory, and $5,100 for logistics support. Using an existing standard part results in an estimated cost avoidance of $27,500 over a weapon system's life cycle. Therefore, a program with 10,000 standard parts may easily achieve a life-cycle cost avoidance of $6.8 million.

In addition to reducing life-cycle costs, using standard parts significantly improves the logistics footprint by reducing the variety of supply items that must be managed and promoting the use of common processes. It also facilitates competition.

Problem/Opportunity

New items are continually entering the DoD inventory system. However, it often is not clear whether an item should remain as a standalone code and part number buy, whether the item may be a potential candidate for inclusion in existing standardization documents,

or whether it warrants the creation of new specification documentation. Ms. Wilson recognized that it may be possible to identify candidate items for standardization by reviewing weapons systems provisioning data.

Approach

Ms. Wilson undertook a study to determine the feasibility of creating a process the Lead Standardization Activity (LSA) could use for identifying and pursuing standardization opportunities based on reviews of weapons systems provisioning data. Among other things, she sought input from her colleagues in DLA Land and Maritime's Parts Support and Standardization Branch and customers such as Preparing Activities (PAs), Qualifying Activities (QAs), and Item Reduction Activities (IRAs). Her research produced sufficient evidence of the potential for revising standardization documents and developing new ones in response to maintaining awareness of standardization needs and activities across DoD. It also produced the framework for a process that the Parts Support and Standardization Branch could use to advance standardization.

The resulting process has the following general steps:

- Obtain a monthly report from DLIS citing the desired technical characteristics of new items entering the DoD inventory system
- Review the DLIS report to identify items within the LSA's areas of responsibility
- Research and analyze the provisioning data on the items to determine if the items could be matched with items in existing standardization documents or if new specifications could be created to cover the items
- For an item considered a candidate for standardization, request the PA to evaluate the technical documentation and, if warranted, take the necessary actions to update the existing specification or create a new one
- Update DLIS data to link national stock numbers (NSNs) to existing specifications and standards
- Encourage the QA to qualify the item and list it on the QPD
- Track progress in a database to ensure timely completion of standardization projects.

To implement this process for the long term, Ms. Wilson developed a protocol and flow charts, documented the procedures, and identified the information to be captured in the database so that it could serve as a tracking mechanism. She also developed training materials to help advance the skills needed by LSA personnel to look for ways to obtain the optimal degree of standardization within their assigned standardization areas. In addition, annually, she develops numeric goals for the program area with special emphasis on emerging areas of interest from the weapons systems programs provisioning data.

Under the leadership of Ms. Wilson, the LSA actively began this process in February 2008 and has continued to refine the process to more effectively identify standardization opportunities based on lessons learned. For example, the LSA now updates total item records to link new NSNs with their respective technical descriptions from specifications and standards.

Outcome

Under the leadership of Ms. Wilson, the Parts Support and Standardization Branch has identified numerous standardization opportunities and recommended specific actions to take advantage of those opportunities. The following are examples:

- A request for the development of a basic detail specification, supplement, and 11 specification sheets covering hydraulic tube fittings in Federal Supply Class (FSC) 4730 (Fittings and Specialties: Hose, Pipe, and Tube) was accepted by the PA. The justification for the standardization projects was further solidified after the PA conducted an engineering practice study and received six concurrences from the participating military services. Standardization projects have been assigned, and the PA has coordinated draft documents. The specification has been submitted to DLA headquarters to obtain approval for incorporating qualification requirements into the specification. This effort involves converting approximately 120 items to standard parts.
- A request for the development of a basic detail specification, supplement, and 12 specification sheets covering hydraulic and pneumatic fittings in FSC 4730 was accepted by the PA. Standardization projects have been assigned and the PA has coordinated draft documents. The specification has been submitted to DLA headquarters for approval of incorporating qualification requirements into the specification. This effort involves converting approximately 150 items to standard parts.
- Sixteen parts in FSC 4730 were identified citing MIL-DTL-52525 specification sheets as the acquisition documents, but the specification sheets do not cite those parts. A request has been forwarded and approved by the PA to add the products to MIL-DTL-52525/1, /3, /4, /5, /7, /10, /11, and /12. The QA has also agreed to conduct qualification tests for these items for inclusion on the QPD. Standardization projects to revise the documents were initiated in FY10.
- A request was forwarded to the committee chair of ASTM B687, "Standard Specification for Brass, Copper, and Chromium-Plated Pipe Nipples" (FSC 4730), to incorporate eight additional sizes bought by DLA. The committee chair has agreed, and action is underway to revise ASTM B687.
- An item reduction action was taken to standardize fitting NSN 4730-01-015-8882 to NSN 4730-00-193-2709.
- Twenty-six item reduction actions were submitted to replace nonstandard parts with MIL-PRF-55342, "Fixed Film Resistors" (FSC 5905), preferred items.

- Variations of circuit breakers, FSC 5925, have been recommended for development of five military specifications and possible specification sheets, which involves converting approximately 40 items to standard parts.
- A request was forwarded to the PA to consider converting 16 engineering drawings for connectors, FSC 5935, to military specification sheets, with further development of a basic military specification and supplement. The request was approved by the PA, and standardization projects will soon be initiated to convert approximately 100 items to standard parts.
- A request to incorporate modified items into SAE AS85049/1, "Cable Clamps," FSC 5935, is being worked with the manufacturer and SAE, which involves converting 40 items to standard parts.
- Nine potential MIL-PRF-83536 specification sheets for E/EA/ES215 track mount 15 ampere series similar to MIL-PRF-83536/9 through /12 and /15 through /19 series relays of similar construction to the 10 ampere relays in FSC 5945 (Relays and Solenoids) are to be developed. These actions are of interest to and supported by industry and the military services. Standardization projects will soon be initiated to convert 194 items to standard parts.
- The potential exists for a military specification to be developed for the 10 amp rotary relay, FSC 5945. The PA is reviewing this request.
- An item reduction action was initiated and approved covering NSN 5945-01-558-9781 with part number M83536/10-024M. This item is also linked to NSN 5945-01-396-0626. Item reduction actions were also taken to standardize an electromagnetic relay (NSN 5945-01-562-4161) to an existing NSN (5945-01-302-4328).
- A request to add part number M17/192-0003 to the QPD was accepted by the QA. This item covers NSN 6145-01-558-9942 (Cable, Radio Frequency) and QPD-17.
- A request for engineering support was initiated through the supply chain product specialist and approved by the Engineering Support Activity to cross NSN 6145-01-560-1586 (Cable, Radio, Frequency) to NSN 6145-00-542-6092.

The items covered by these actions are used in an extensive array of critical and high-priority U.S. and NATO land and maritime weapons systems.

The standard parts will lower procurement costs, shorten acquisition lead-times, increase operational readiness, and reduce the logistics footprint. Moreover, the standardization actions will enhance full and open competition among the manufacturers of the standard parts and allow for greater interoperability among the military services. These actions also support the qualification program by improving the availability of the products by meeting quality, reliability, performance, and safety requirements. Savings related to this effort are on the order of $14.5 million.

Standardization has been further advanced by researching part number configurations and aligning them with the governing military specifications. As a result, the Parts Support and Standardization Branch submitted 350 cataloging requests to DLIS to correct military specification part numbers covering 90 different military specifications. Most of these actions have been completed. As a result, operational readiness will be improved and lead-times will be reduced, for a cost saving of about $525,000.

Current Status

A number of the specification actions are in process by the military and industry design activities, with many specifications and standards documents scheduled to be completed in FY11. These actions will prevent the inclusion of a minimum of 700 nonstandard parts in the inventory.

Ms. Wilson is continuing her efforts to advance the identification of additional standardization opportunities and thus to enhance operational readiness, reduce acquisition lead-times, and increase cost savings. She shares any and all new developments with other staff members as a means to provide the greatest benefit to the warfighter.

Challenges

This effort was the first of its kind and required brainstorming and conceptualizing about what value the DLIS information could provide. It also required determining how to analyze the data, what type of information signaled the type of standardization area that would be affected, and what additional efforts would be needed to initiate standardization actions in support of the warfighter.

The LSA, through Ms. Wilson's leadership, established collaborative relationships with and obtained support from the PAs, QAs, IRAs, and industry groups in managing and coordinating the recommended standardization actions on weapons provisioning data to ensure the optimal degree of standardization across DoD.

About the Award Winner

Beverly Wilson is the lead equipment specialist in DLA Land and Maritime's Parts Support and Standardization Branch. The LSA's responsibilities include some 54 FSCs in the electronics and mechanical areas.

A Standardized Catalog Allows a Common Food Management System

Award Winner: DLA Team

A team from Defense Logistics Agency (DLA) Troop Support spent over 2 years developing a process to standardize and streamline subsistence line items of supply to meet the criteria and requirements of the upcoming commercial off-the-shelf (COTS) Common Food Management System (CFMS), a standard, integrated ordering system for military and federal customers. A crucial element in CFMS's development was the standardization of the DLA catalog, which required reviewing nearly 110,000 food and related items. Coordinating closely with vendors and customers to ensure their agreement, the CFMS team identified more than 54,500 items to be archived or canceled due to obsolescence or duplication. The team put the remaining 53,000 items through a vigorous standardization process across all military customers, for example, to establish standard package sizes. More than halving the number of items in the catalog will reduce the yearly inventory maintenance costs by over $81.5 million. Cost avoidance is expected to exceed $1.5 billion, due to reductions in overstocking, incorrect orders, receipt adjustments, faulty deliveries, and so on. Moreover, CFMS's standardized catalog will improve inventory management, item sustainability, and interoperability.

Background

The military services order subsistence items through the DoD wholesale food ordering system—Subsistence Total Ordering and Receipt Electronic System (STORES)—using five dissimilar retail food management systems: Army Food Management Information System (AFMIS), Corporate Food System (CFS) (used by the Air Force), Marine Corps Food Management Information System (MCFMIS), Navy Food Service Financial Management Information System (NFMIS), and Food Service Management (FSM) (used by the Navy and Military Sealift Command). Because the services' systems are outdated, nonintegrated, and noncompliant with information assurance (IA) and electronic data interchange (EDI) standards, the DoD Joint Food Policy Council directed the replacement of service-unique retail food management systems with one standardized retail ordering system. DLA was given the responsibility for developing the new system, while DLA Troop Support received program management responsibility.

DLA's goal was to establish a common, fully integrated subsistence supply chain ordering system that will provide end-to-end linking of warfighter demand with sources of supply. The resulting system will comprise the web-enabled CFMS, which uses COTS software (Horizons OneSource); STORES; and the Enterprise Business System (EBS) for billing and payment.

Problem/Opportunity

The retail ordering processes vary from service to service. They also vary within each service depending on the situation (peace or war) and location (CONUS or OCONUS). In addition, the services' systems are built on outdated technology and are

not easily integrated with DLA's wholesale system for ordering, receipting, and so on, and the cost of modernizing them and improving their interoperability with STORES would be exorbitant. The fragmented retail ordering systems also cause problems such as overstocking, incorrect orders, receipt adjustments, and faulty deliveries.

The development of CFMS gave DoD the opportunity to address these issues by establishing a single modern end-to-end supply chain for subsistence items. It also opened up the opportunity to provide core food management functionality, such as recipe maintenance, menu production, nutritional linking for all ingredients, food production, inventory management, item substitutability, and tracking of funding commitments and obligations to support the warfighter worldwide. Finally, and perhaps most crucial to CFMS's success, it gave DLA an opportunity to rationalize the catalog of subsistence items available to the services by eliminating obsolete items and by identifying duplicative items and standardizing on one of them.

Approach

Before CFMS could be implemented, DLA Troop Support needed to establish a common catalog of subsistence items to be made available to the services. The CFMS team, formed to interpret, develop, and modify cataloging requirements for all subsistence stock numbers, comprised food technologists, as well as project integrators from DLA Troop Support's J6P to provide information technology (IT) support.

The CFMS team needed to review nearly 110,000 catalog items. Of those, the team, coordinating closely with the services and vendors to ensure their agreement, identified more than 54,500 items for archiving or cancellation due to obsolescence or duplication.

The team then standardized the remaining 53,000 items across all military customers—again, coordinating closely with the services and vendors. The team's vigorous standardization process had two levels. The first addressed packaging: package size, package unit of measure (UOM), and package code. Unit of measure is the higher level of standardization in which most items were standardized (Navy system requirements prevented some items from being standardized). This included purchase ration factor (PRF), vendor UOM, and units per purchase pack (UPP). To complete these functions, the team worked closely with contracting personnel, both CONUS and OCONUS. Determining substitutability depended on the conglomeration of the above data and linking it with nutritional data. Incorporating these variables into CFMS required special programming by individuals familiar with both the systems and ordering processes.

The second level of standardization was to prepare the items for use in CFMS by standardizing descriptions. For example, the team truncated the DLA Troop Support item

descriptions from 80 characters to 30 characters, created new abbreviations when necessary, and finalized the packaging data (package size, package UOM, package code, PRF, vendor UOM, UPP, and catch weight if applicable). Once a vendor submits a catalog item adhering to the standards created by the food technologists, the item is "locked" in the system.

The CFMS team completed its work to standardize the catalog in FY10.

Outcome

The most notable outcome of the CFMS catalog standardization project is the establishment of a direct seamless and responsive link between the military services and DLA vendors. More specifically, the project integrates the subsistence supply chain to provide best-value supplies and services consistently to DLA customers. CFMS is a COTS system that will deliver enhanced, value-added logistics solutions to the warfighter, while providing real-time data for oversight of subsistence operations from the dining halls to the field. Finally, CFMS will help DoD implement applicable financial regulations and comply with the Federal Financial Management Improvement Act.

DoD and the services will benefit from improved performance, quality, reliability, and sustainability; cost avoidance; and cost savings.

IMPROVED PERFORMANCE, QUALITY, RELIABILITY, AND SUSTAINABILITY

When CFMS is fully operational, all military service customers will be able to order food, food service equipment, operational rations, and related items via the integrated, streamlined subsistence supply chain. CFMS also will help the services with meal production support, demand-side product receiving, operational reporting, and other operational functions. Consolidated, accessible electronic information will vastly improve the military services' menu planning, recipe maintenance, and nutritional analysis. In addition, local inventory management, pricing, food quality variation and wholesomeness, and item substitutability will greatly suppress past issues while streamlining operations and sustainability for the services. The overall benefits—improvements to the DoD military feeding program—are invaluable, but also immeasurable except for customer satisfaction. However, savings could reach millions of dollars.

COST AVOIDANCE

In addition to seeing substantial improvements in performance, quality, reliability, and sustainability, the services will avoid the cost of maintaining their own individual ordering systems, as well as the cost of meeting EDI and IA standards. More specifically, the retirement of the five service retail systems—AFMIS, CFS, MCFMIS, NFMIS, and FSM—will result in an estimated DoD cost avoidance of more than $1.5 billion due to

the elimination of the requirements for service system maintenance, individual system IA and fiscal compliance, contractor and enterprise oversight, management of funds appropriations, and supply chain integration.

The services also will avoid costs related to overstocking, incorrect orders, faulty deliveries, returns, receipt adjustments in EBS, and so on. The cost avoidance is attributed to the availability of accurate standardized data (such as package size and UOM) on all 53,000 subsistence items in STORES and EBS. Although the costs of incorrect orders and similar issues have never been tracked for all services, reducing them is estimated to avoid millions of dollars in costs.

COST SAVINGS

The work of the CFMS team saved some $83 million. Most of the savings—$81.5 million—can be attributed to the team's halving the number of items in the catalog, which substantially reduces inventory maintenance. The other $1.5 million in savings is due to the rationalization and standardization of the remaining 53,000 subsistence items and to the lockdown of the PRFs in the material logistics data. DLA Troop Support realized those savings using available full-time equivalents (FTEs), at regular FTE costs, with no additional personnel or overtime.

Current Status

Pilot testing of CFMS is planned for June 2011 at Quantico and will continue through the full deployment decision in October. At that time, CFMS will begin full deployment to Marine Corps sites. Deployment to other services will commence upon completion of the Marine Corps sites.

Challenges

The team's challenges fell into two areas: technical and standardization barriers, and contractual barriers.

TECHNICAL AND STANDARDIZATION BARRIERS

As with the development of all IT systems and programming, many adjustments, reprogramming, reworking, and revisions were required due to issues arising continually throughout the project. The CFMS team identified and resolved issues involving food standardization such as catch weight in meat and poultry items; canned drained weight; standardization of abbreviations across STORES, EBS, and CFMS; minimum weights for No. 10 can items; and special Navy requirements. Many of these adjustments required field additions or revisions, coordination of coding across systems, and reprogramming, all of which slowed progress and caused additional rework.

CONTRACTUAL BARRIERS

In early FY09, the initial CFMS contract was terminated, bringing the catalog standardization project to a halt. After some 6 months and rumors that CFMS would be completely scrapped, DLA Troop Support selected a new contractor with different personnel and a different direction, vastly altering the timelines for project completion. Scheduling, of course, in terms of programming importance, also altered the project completion timeline. In addition, high-level meetings and subsequent testing identified missing links, requiring programming enhancements, further stalling progress and adding stress and frustration.

About the Award Winner

The DLA team consisted of Catherine Capriotti, Carolyn Dempsey, John Robinson, Scott Koch, and Jeffrey Nienstedt—all from DLA Troop Support in Philadelphia, PA—plus Carol Willey from the Army's Natick Soldier Research, Development and Engineering Center in Natick, MA.

Catherine Capriotti, Carolyn Dempsey, and John Robinson, DLA food technologists, were responsible for reviewing the nearly 110,000 items across subsistence catalogs. Ms. Capriotti and Ms. Dempsey were in charge of items categorized as Prime Vendor, National Allowance Pricing Agreement, Operational Rations, and Special Army and Navy Programs. Mr. Robinson was lead for items categorized as CONUS/OCONUS Produce, Market Ready, USDA School Lunch, and Food Service Operating Supplies.

Scott Koch and Jeffrey Nienstedt, J6P project integrators, set up program requirements and advised the team on IT issues. Mr. Koch developed the initial programming for standardizing items for CFMS conversion. In addition, he provided the programming to incorporate lists of substitute products into the ordering system. Mr. Nienstedt ensured the standardization of logistics data across STORES, EBS, and CFMS by interfacing the systems.

Carol Willey, an Army registered dietician, supplied nutritional analysis of the items to assist with menu planning and recipe maintenance for the services. The nutritional information also was used to build lists of substitute products directly within the ordering system.

Program News

Topical Information on Standardization Programs

ASTM Cavanaugh Award Honors Contributions of Gregory E. Saunders

Gregory E. Saunders, DSPO director, has been named the recipient of the 2010 W.T. Cavanaugh Memorial Award given by ASTM International. Mr. Saunders received the award, which recognizes people of eminence within the voluntary standards system, for outstanding and distinguished leadership in the global standardization community and for advancing the use of voluntary consensus standards in government acquisitions and industrial applications.

DSP Recognizes Achievements in Standardization

Annually, DSP recognizes individuals and teams from the military departments and defense agencies who have achieved significant improvements in interoperability, cost reduction, quality, reliability, and readiness through standardization. Since 1987, DSP has recognized these outstanding performers in a formal ceremony. The ceremony recognizing the 2010 award winners was held on March 16 at the Pentagon's Hall of Heroes. Mr. Gregory Saunders, Director, DSPO, officiated the ceremony with help from Mr. Stephen Welby, Deputy Assistant Secretary of Defense for Systems Engineering.

An Army-led team, formed by the Armament Research, Development and Engineering Center, was the 2010 Distinguished Achievement Award winner for its work on a Joint Modular Intermodal Container to get supplies to the warfighter quickly, efficiently, and seamlessly. The team received an engraved crystal Pentagon and a check for $5,000.

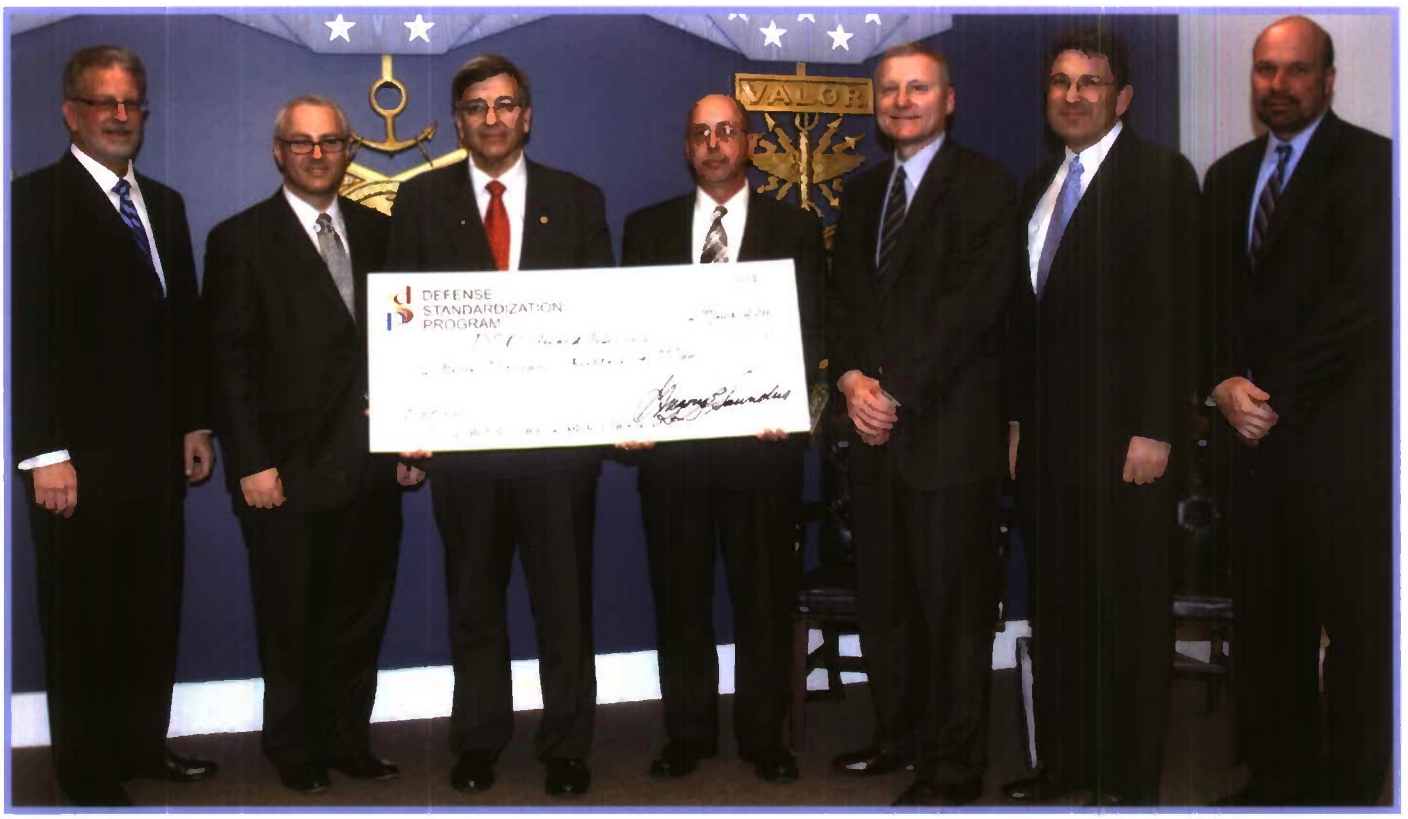
The remaining awards were presented to four teams and two individuals:

- Army team, for making the business case for the consolidated procurement of industry standards and specifications
- Army-led team, for developing a standard method for testing the resistance of materials used to protect rotor blades from sand erosion

- Navy-led team, for developing a Joint Counter Radio-Controlled Improvised Explosive Device (IED) Electronic Warfare (JCREW) system of systems that will defeat evolving radio-controlled IEDs globally
- Larry Crane, from the Air Force Materiel Command's Common Aircraft Portable Reprogramming Equipment (CAPRE) program, for creating a standard or common code template for developing software used to transfer data from CAPRE to aircraft avionics systems
- Beverly Wilson, from Defense Logistics Agency (DLA) Land and Maritime, for developing and implementing a process to identify and pursue part standardization opportunities by analyzing weapons systems provisioning data
- DLA Troop Support team, for developing a Common Food Management System that standardizes, integrates, and streamlines the process for ordering subsistence items.

Distinguished Achievement Award Winner

Standard Containers Get Supplies to the Warfighter Faster



Pictured above are, left to right, Mr. Greg Saunders, Mr. Stephen Welby, Mr. Douglas Chesnulovitch, Mr. Roy Smith, COL John Weed (Ret.), Mr. John Rossi, and Mr. Kenneth Zimms.

Achievement Award Winners

Analysis Makes the Case for Consolidated Procurement of Industry Standards and Specifications

Pictured above are, left to right, Mr. Stephen Welby, Mr. Timothy Edwards, Mr. James Dwyer, and Mr. Bryant Allen.

A New Test Standard Cuts the Erosion of Rotor Blade Protective Materials

Pictured above are, left to right, Mr. Stephen Welby, Mr. Richard Squillacioti, Mr. David Stone, Mr. Marc Pepi, Mr. James Dwyer, Ms. Lynne Pfledderer, Mr. Bryant Allen, Maj Renardo Brown, Dr. Andrew Phelps, and Dr. Ernest Chin.

Achievement Award Winners

JCREW Systems Defeat the Global Radio-Controlled IED Threat

Pictured above are, left to right, Mr. Stephen Welby, Mr. Ralph Troisio, Mr. Adam Webb, Mr. Victor Gavin, CAPT John Neagley, Mr. Bruce Strackbein, Mr. James Ryan, Mr. Keith Plumadore, CAPT Thomas Smith, Mr. Chris O'Donnell, CAPT Jerry Reid, Mr. Christopher Paquette, and COL John Surdu.

Common Code Cuts the Cost of CAPRE Communications with Aircraft Avionics Systems

Pictured above are, left to right, Mr. Stephen Welby, Mr. Larry Crane, Dr. Steven Walker, and Mr. John Heliotis.

Achievement Award Winners

Weapons Systems Provisioning Data and Standardization Complement Each Other

Pictured above are, left to right, Mr. Stephen Welby, Ms. Beverly Wilson, Mr. James McClaugherty, Mr. James Crum, Mr. James Jobe, and Mr. Bill Lee.

A Standardized Catalog Allows a Common Food Management System

Pictured above are, left to right, Mr. Stephen Welby, Mr. Scott Koch, Ms. Carol Willey, Mr. Jeffrey Nienstedt, Ms. Leah Aleman, Mr. James Jobe, Ms. Mary Caniff, Mr. Bill Lee, and Ms. Lynette O'Brien.

Events

Upcoming Events and Information

August 14–18, 2011, Las Vegas, NV

60th Annual SES Conference

The 60th Annual SES Conference will be held at the Encore at Wynn, Las Vegas, NV. The conference theme will be "The Evolving World of Standards: What's on the Horizon?" The conference includes a welcome reception, keynote address, and 2 days of technical sessions. Two professional development courses will be offered for an additional cost. The keynote address and technical sessions will be broadcast live from the Encore on August 15 and 16, 2011, as a virtual conference. If you are not able to make it in person, plan to attend virtually. For more information, please go to the SES website at http://www.ses-standards.org.

August 29–September 1, 2011, Fort Lauderdale, FL

DMSMS and Standardization Conference

Mark your calendars now and plan to attend the 2011 Diminishing Manufacturing Sources and Material Shortages (DMSMS) and Standardization Conference at the Westin Diplomat Hotel in Hollywood, FL. Once again, the conference will include multiple tracks of topics, including one featuring topics relating to the Defense Standardization Program and another on the Government-Industry Data Exchange Program. As the conference planning develops, key information will be posted on the DMSMS 2011 website. For more information, please go to the DMSMS website at http://www.dmsms2011.com.

People

People in the Standardization Community

Farewell

James Freeman, of the Naval Air Systems Command (NAVAIR) Standardization Division, retired in December 2010 after 36 years of federal service. He acquired an in-depth working knowledge of DSP and made noteworthy contributions in such areas as Commercial Item Descriptions, Data Item Descriptions, Joint Service Specification Guides, configuration management, and drawing practices. With professionalism and the desire to share his knowledge with others, Mr. Freeman worked with teams of technical experts from NAVAIR, DoD, and industry to develop DSP specifications and standards. He also mentored numerous people in DSP policy and procedures. While sharing his vast technical knowledge and guidance, he ensured the configuration management of NAVAIR systems for use by our fleet. It is through the support of individuals like him that we are able to continue to strengthen our programs and to develop new and innovative systems to serve our fleet.

Upcoming Issues
Call for Contributors

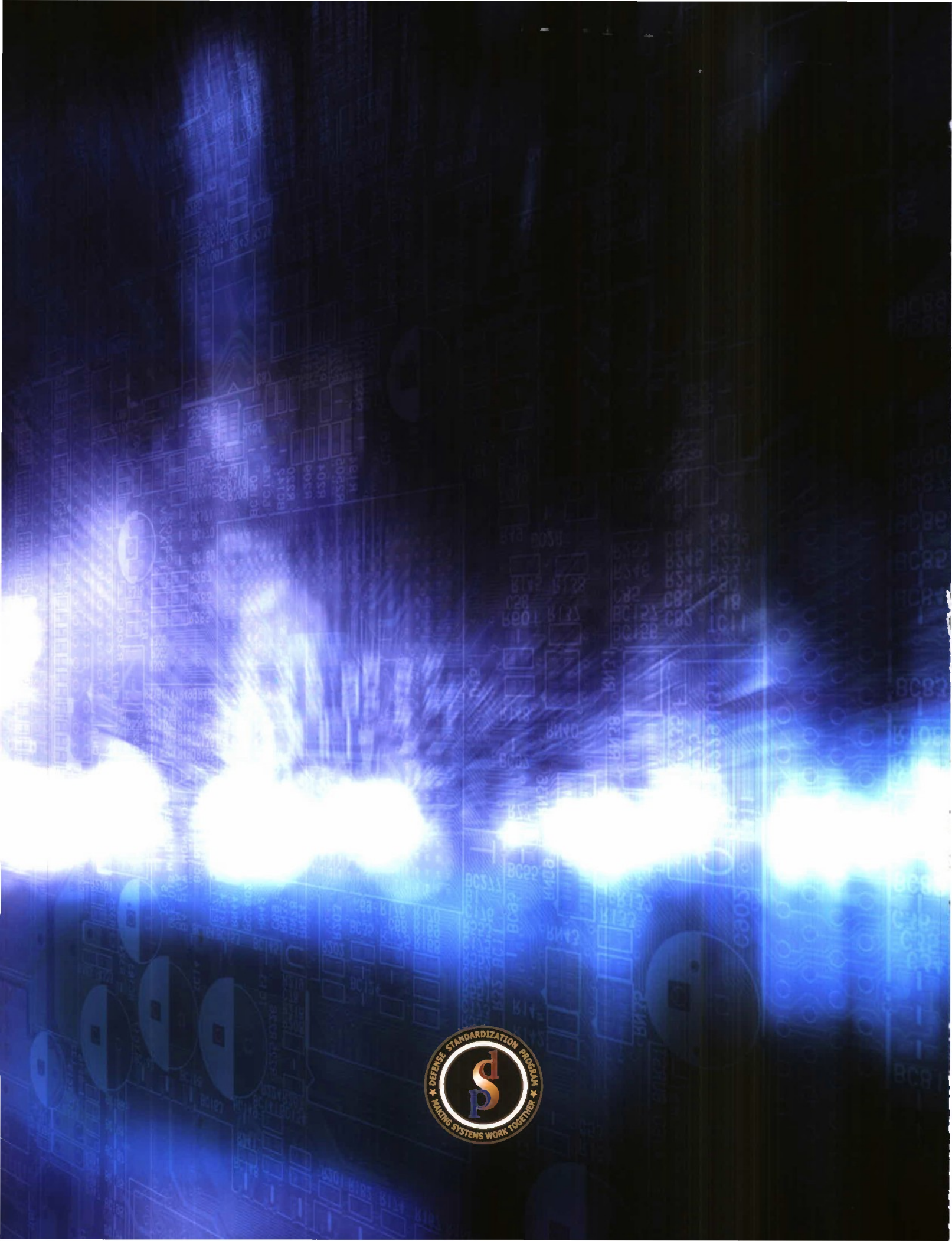
We are always seeking articles that relate to our themes or other standardization topics. We invite anyone involved in standardization—government employees, military personnel, industry leaders, members of academia, and others—to submit proposed articles for use in the *DSP Journal*. Please let us know if you would like to contribute.

Following are our themes for upcoming issues:

Issue	Theme
July/September 2011	Materiel Readiness
October/December 2011	International Standardization
January/March 2012	Non-Government Standards

If you have ideas for articles or want more information, contact Tim Koczanski, Editor, *DSP Journal*, Defense Standardization Program Office, 8725 John J. Kingman Road, STP 5100, Fort Belvoir, VA 22060-6220 or e-mail DSP-Editor@dla.mil.

Our office reserves the right to modify or reject any submission as deemed appropriate. We will be glad to send out our editorial guidelines and work with any author to get his or her material shaped into an article.


DEFENSE STANDARDIZATION PROGRAM
MAKING SYSTEMS WORK TOGETHER